British Columbia Institute of Technology

3700 Willingdon Avenue
Burnaby 2, British Columbia
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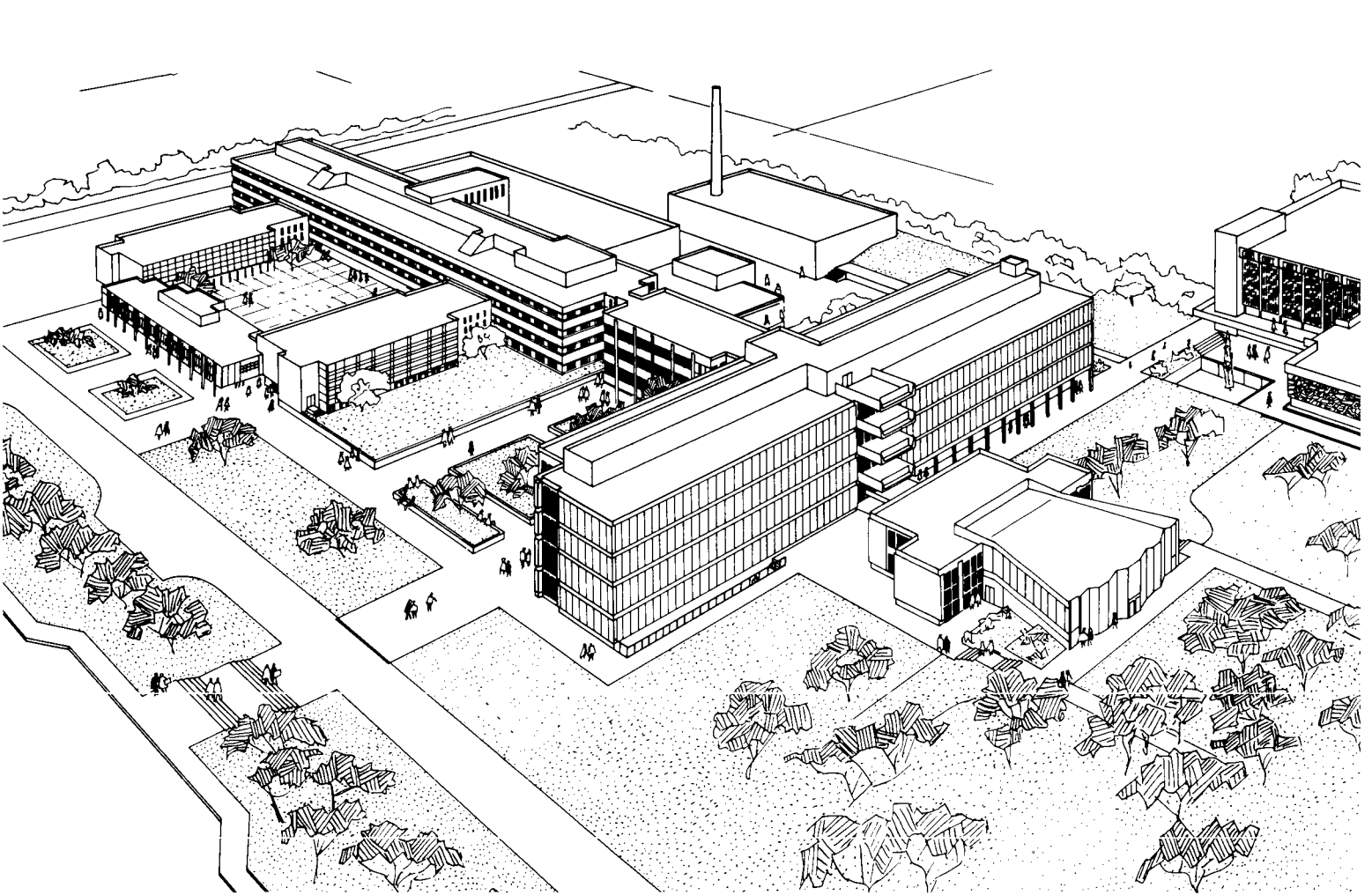

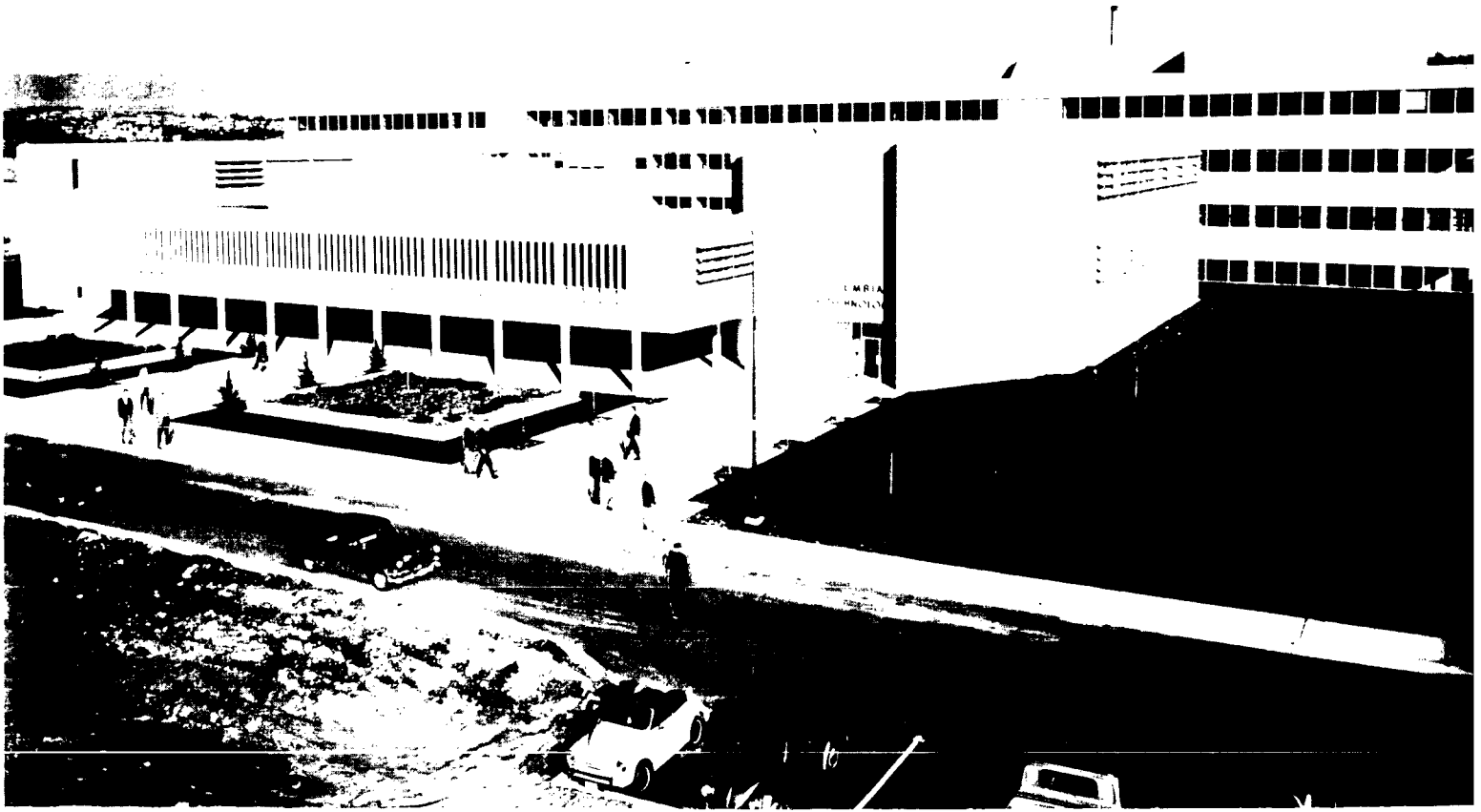

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Deputy Minister of Education

JOHN S. WHITE

Director of Technical and Vocational Education
and
Regional Director of Canadian Vocational Training,
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Aims and Objectives

The British Columbia Institute of Technology, an institution for advanced education, is the first of its kind in British Columbia. It is founded on the following resolutions:

Improvement in the art of understanding, utilizing, and controlling the forces of nature for the benefit of humanity is a necessity.

All members of the Institute staff will teach their juniors, cooperate with their equals, and learn from their seniors with full awareness of the need for ethical behaviour and full realization of their responsibility to society.

The Institute's programmes will demand ability, strong motivation, and serious effort on the part of the student.

Education of technologists at the post-secondary school level should develop ability to apply engineering, scientific, business, or professional concepts to trade, industry, commerce, or professional operations in a chosen field. The training must not be so narrow that it prohibits reasonable understanding of professional concepts nor so broad that it precludes practical application to technical matters.

This type of education requires a proper balance between theoretical and practical training and presupposes that the course length will be completely adequate to provide the required foundation for the student's chosen career.

It is the aim of the Institute to produce graduate technicians who, with additional experience, will rapidly assume responsible supervisory or managerial positions in business or industry. Their particular interests and abilities should be in the practical and technical phases of engineering or business rather than in the development of new basic principles. Consequently, it is expected that they will provide a liaison between the professional man and the craftsman.

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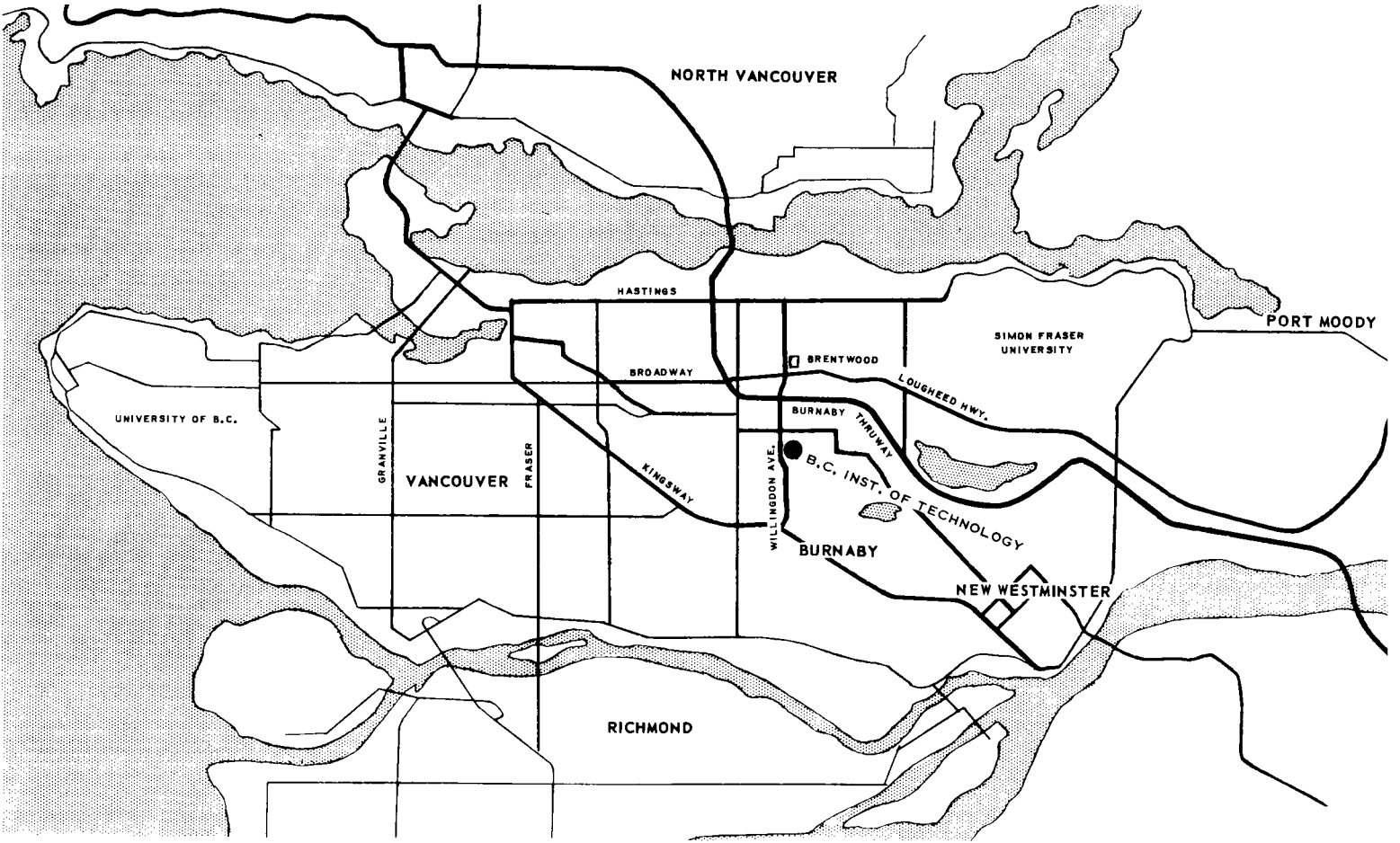
Principal, British Columbia Institute of Technology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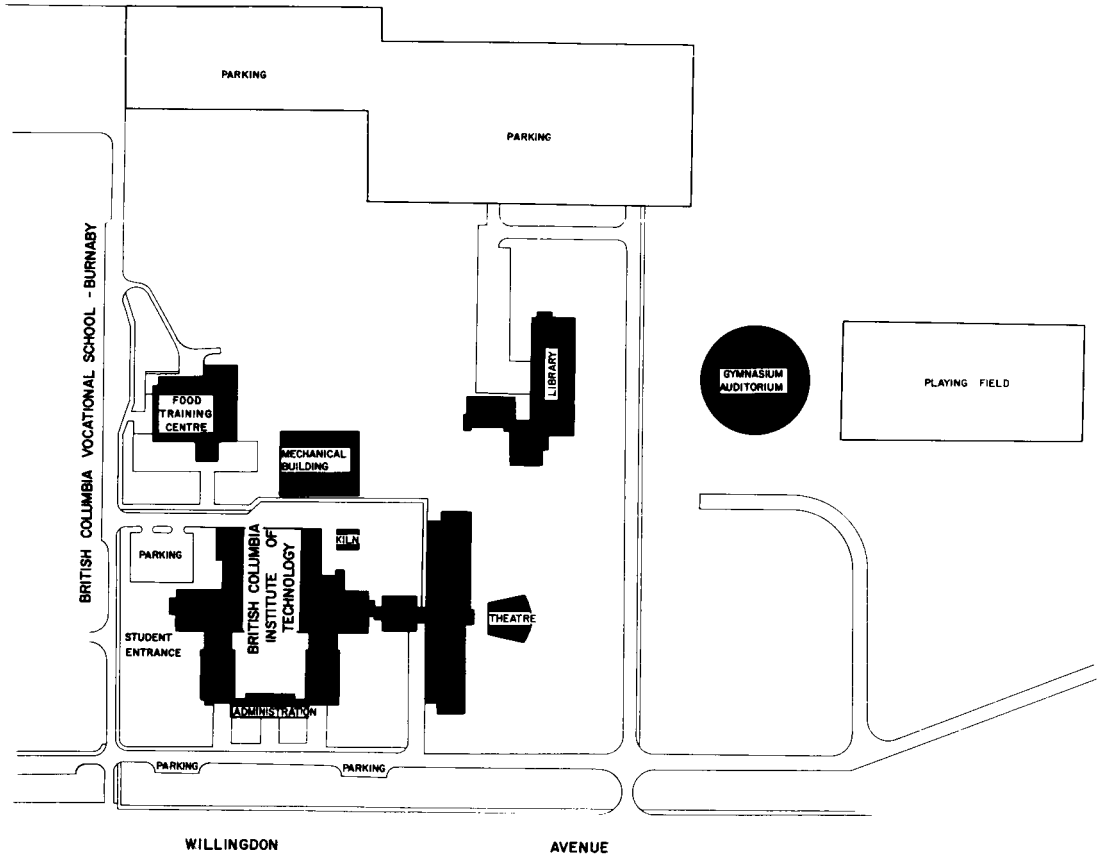
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M. J. JONES, Chief Building Inspector, Corporation of the District of Burnaby, Burnaby.
D. C. LOGAN, Architect, Duncan McNab and Associates, Vancouver.

D. A. MATHESON, City Building Inspector, City of Vancouver, Vancouver.
J. I. THOMPSON, Assistant Technical Administrator, Department of Transport, Vancouver.
R. L. TOBY, Architect, Toby, Russell & Buckwell, Vancouver.
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C. C. STRACHAN, Director, Research Station, Canada Department of Agriculture, Summerland.

Food Production Option Advisory Committee

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K. E. LACHANCE, Production Manager, National Paper Box, MacMillan, Bloedel and Powell River Limited, Vancouver.
D. J. MACLAURIN, Assistant Professor, Department of Chemistry, University of Victoria.
J. G. PRENTICE, President, Canadian Forest Products Ltd., Vancouver.
R. H. RICHMOND, Personnel Manager, Northwood Pulp Ltd., Vancouver.
E. C. SHERMAN, Resident Manager, Howe Sound Pulp Division, Canadian Forest Products Ltd., Port Mellon.
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F. L. C. REED, Economist and Statistician, Council of Forest Industries, Vancouver.

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G. JANSEN, Engineer, Technical Services, Shell Canada Ltd., Burnaby.
E. M. PRICE, Senior Technician, Department of Physics, University of British Columbia, Vancouver.
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MRS. A. BREARLEY, Librarian, Science Division, University of British Columbia, Vancouver.

MRS. M. Z. I. MCDOUGALL, Head, Science and Technology Division, Vancouver Public Library, Vancouver.

W. S. LANNING, Associate Professor and Director of Curriculum Laboratory, University of British Columbia, Vancouver.

MISS A. R. LEITH, Head, Science Division, Library, University of British Columbia, Vancouver.

MISS A. TUFTS, Head, Business Division, Vancouver Public Library, Vancouver.

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R. M. KAPLAN, New Product Manager, MacMillan, Bloedel and Powell River Limited, Vancouver.

J. MACD. LECKY, Executive Assistant to Publisher, The Vancouver Sun, Vancouver.

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G. G. MOSS, Merchandise Manager, Simpsons-Sears Ltd., Burnaby.

R. L. PETERS, Assistant Store Manager, Hudson's Bay Company, Vancouver.

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Ex Officio:

D. K. BANNERMAN, Head, Mechanical Technology, British Columbia Institute of Technology, Burnaby.

Members:

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COL. J. W. INGLIS, Consultant, 2025 Bellevue Avenue, West Vancouver.
F. R. KILLAM, President, Industrial Coatings Ltd., Vancouver.
J. MCHUTCHISON, Plant Engineer, Canadian Western Pipe Mills Ltd., Port Moody.
W. E. MILLS, Senior Mechanical Engineer, Department of Public Works, Victoria.
W. F. PAGE, Machine Shop Foreman, Burrard Drydock Co. Ltd., North Vancouver.
N. PURSELL, Senior Engineer, International Power & Engineering Consultants Ltd., Vancouver.
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L. F. WRIGHT, Vice-President, Wright Engineers Ltd., Vancouver.

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Secretary:

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S. T. RICHARDS, Head, Medical Technologies, British Columbia Institute of Technology, Burnaby.

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C. F. A. CULLING, Instructor, Department of Pathology, Faculty of Medicine, University of British Columbia, Vancouver.
C. E. DOSDALL, Assistant Administrator, St. Paul's Hospital, Vancouver.
DR. G. R. GRAY, Assistant Hæmatologist, Department of Pathology, Vancouver General Hospital, Vancouver.
DR. G. M. MARTIN, Director of Laboratories, Royal Inland Hospital, Kamloops.
DR. E. W. SHEPHERD, Pathologist, Shaughnessy Hospital, Vancouver.
DR. K. T. THORNTON, Associate Pathologist, Royal Jubilee Hospital, Victoria.

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H. J. OANCIA, Chief Technician, Department of Radiology, Royal Columbian Hospital, New Westminster.
S. M. SMITH, Technical Adviser, Radiology, Department of Health Services and Hospital Insurance, Vancouver.
DR. J. D. STEVENSON, Drs. Thorleifson, Stevenson, and Campbell, Vancouver.

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J. D. LITTLE, Vice-President, Operations, Placer Developments Ltd., Vancouver.
J. W. PECK, Chief Inspector of Mines, British Columbia Government, Victoria.
E. C. ROPER, Principal, British Columbia Institute of Technology, Burnaby.

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DR. D. H. WILLIAMS, Professor and Head, Department of Continuing Medical Education, Faculty of Medicine, University of British Columbia, Vancouver.
J. S. WHITE, Director of Technical and Vocational Training, Department of Education, Victoria.
R. S. CAREY, Chairman of the Technological Planning Committee, British Columbia Institute of Technology, Burnaby.

Observer:

H. L. CLEMENT, Regional Representative, Western Region Technical and Vocational Training Branch, Federal Department of Labour, Vancouver.

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A. T. HOLMES, Partner, Underhill and Underhill, Surveyors and Civil Engineers, Vancouver.
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E. D. SUTCLIFFE, General Manager, British Columbia Operations, Dominion Construction Co. Ltd., Vancouver.
F. TEMPLETON, President, Wing Machinery Ltd., Vancouver.

Calendar

1966

JULY

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1967

JANUARY

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Calendar of Events, Academic Year 1966-67

1966

July 1 - - - - Commencement of academic year.

August 16 - - - Closing date of applications for admission.

September 6 and 7 - Registration of students.

September 8 - - - First term—classes begin.

October 10 - - - Thanksgiving Day holiday.

November 11 - - Remembrance Day holiday.

December 17 - - Christmas vacation commences.

1967

January 3 - - - Second term—classes begin.

March 20 to 23 - - Spring vacation.

March 24 - - - Good Friday holiday.

March 27 - - - Easter Monday holiday.

May 22 - - - - Victoria Day holiday.

June 3 - - - - Summer vacation commences.

June 16 - - - - Convocation.

June 30 - - - - Conclusion of academic year.

Medical Technologies: For Calendars of Events see next two pages.

Medical Laboratory Technology Calendar of Events, 1966-67

A. At Associated Training School:

The registration dates at associated training schools vary. The schools will require the enrolling student to report a few days before proceeding to the Institute.

B. At British Columbia Institute of Technology:

September 6, 1966	Registration of students.
September 8	First term—classes begin.
October 10	Thanksgiving Day holiday.
November 11	Remembrance Day holiday.
December 17	Christmas vacation commences.
January 3, 1967	Second term—classes begin.
March 18 to 27	Spring vacation.
March 24	Good Friday holiday.
March 27	Easter Monday holiday.
May 22	Victoria Day holiday.
June 2	Class concludes.

C. At Associated Training School:

June 5, 1967, to June 30, 1968—completion of 22-month training period. Holidays and time off prescribed by the individual training schools.

Medical Radiography Technology
Calendar of Events, 1966-67

FALL CLASS, 1966

A. At Associated Training School:

The registration dates at associated training schools vary. A period of orientation training of about two months' duration in the majority of the schools precedes training at the Institute.

B. At British Columbia Institute of Technology:

September 6. 1966 - -	Registration of students.
September 8 - - -	Fall class commences.
October 10 - - -	Thanksgiving Day holiday.
November 11 - - -	Remembrance Day holiday.
December 17 - - -	Christmas vacation commences.
January 3, 1967 - -	Class recommences.
January 27 - - -	Fall class concludes.

C. At Associated Training School:

January 30, 1967—commence hospital training period. Holidays and time off prescribed by the individual training school.

D. At British Columbia Institute of Technology:

A four-week period of tutorial training will be offered at a convenient date immediately prior to the writing of the certification examination of the Canadian Society of Radiological Technicians.

SPRING CLASS, 1967

A. At Associated Training School:

The registration dates at associated training schools vary. A period of orientation training of about two months' duration in the majority of the schools precedes training at the Institute.

B. At British Columbia Institute of Technology:

January 30, 1967 - -	Registration of students.
March 18 to 27 - -	Spring vacation.
March 24 - - - -	Good Friday holiday.
March 27 - - - -	Easter Monday holiday.
May 22 - - - -	Victoria Day holiday.
June 18 - - - -	Spring class concludes.

General Information

THE INSTITUTE PROGRAMME

The objective of the Institute programme is to provide graduate technologists equipped to meet the needs of industry. Changes in the courses are made only after careful consideration and on the advice of members of the Advisory Committee, employers of graduates, and representatives of various professional organizations.

In the first year there is a common programme of study for most engineering technologies. The subjects have been selected to give students the fundamental principles common to all branches of the technologies.

In both years basic principles and their applications are stressed in the lecture room, and these principles are tested and verified in the laboratories. The laboratory work is organized into groups of experiments. These experiments have been developed to permit students to test ideas formulated in the lecture room, to acquire familiarity with testing and designing techniques, and to develop dexterity in handling experimental equipment. The effectiveness of this approach is reflected in the increased number of students seeking admission to the various programmes and in the demand on the part of industry for services of the graduates of institutes of technology.

I. ENROLMENT

A. Conditions of Admission

1. *General Prerequisites.*—All student applicants must show documentary proof that they have graduated from Grade XII on the University Programme, or the equivalent. This automatically includes English 40 and two years of a foreign language.

Students are referred to each technology for the additional special prerequisites required for enrolment in that technology.

For the Medical Laboratory and Medical Radiography Technologies, the student is referred to the Medical section of the Calendar, pages 51 to 54.

As mathematics is an essential tool of the technician and is in constant use during the Institute programme, all students will be required to have attained pass standing in Mathematics 91.

In most technologies, draughting is a means of communication of only slightly less importance than the English language. The Industrial Arts courses taught in the British Columbia secondary schools include training in draughting. Therefore, one of the Industrial Arts series at the 90 level is a desirable subject for all candidates seeking entrance to most programmes at the Institute.

The Business Technologies require Mathematics 91 as a special prerequisite.

Because the Institute's requirements for admission are new to the British Columbia school system, and because all secondary schools do not offer all the desirable prerequisites, unavoidable deficiencies in Industrial Arts, Chemistry, Home Economics, or Biology will not necessarily preclude admission to an Institute programme.

Students who are entering Grades X and XI in the British Columbia secondary-school system in the fall of 1966 are referred to page 60 for tentative prerequisites for entrance to a particular programme. General prerequisite: Students seeking admission must have fulfilled the requirements for graduation from senior secondary school on the Academic and Technical Programme prescribed by the Department of Education for the Province of British Columbia.

2. Applicants educated outside British Columbia should submit their qualifications to the Registrar of the Institute. Such students must give evidence of reasonable competence in both written and spoken English.

3. A person whose education has been interrupted who, though lacking some of the formal admission requirements, can give evidence of probable success in a course may be admitted as a mature student. Such applications are dealt with on an individual basis. Persons interested should consult with the Registrar of the Institute.

4. Applicants who have successfully completed one or more years of study at a level equal to or higher than that of a British Columbia Institute of Technology course will be permitted to enter at the level of the course for which the application has been made if the work previously covered is similar in content to the work of the Institute's courses, and if, in the opinion of the Board of Admissions, the applicant's record justifies giving him advanced standing.

5. All prospective students must be at least 16 years of age. However, there is no upper age limit.

6. In any programme the Board of Admissions reserves the right to accept only those applicants who appear to have the capabilities necessary for success in the programme.

B. Procedure for Admission

1. Application forms may be obtained from the Registrar's Office.

2. The following documents and material must accompany the application:

(i) An official transcript of all secondary (British Columbia) or high school or university marks, showing necessary credits and grades for admittance to programme desired; *or*

(ii) A statement from the principal of a senior secondary school stating that applicant is expecting to obtain necessary credits and grades for admittance to the programme desired. This statement must be substantiated by an official transcript when it becomes available.

(iii) A registration fee of five dollars ($5), payable by cheque or money order. Please send this amount only, with this application form. If your application is accepted, this fee is not refundable.

3. A medical questionnaire must be completed, and medical fitness determined prior to final acceptance.

4. Registration dates are September 6 and 7, 1966. Students will be notified as to exact time they are required to register. All enrolling students must appear at the Institute or clarify their intentions by letter or wire before noon of the day of registration, otherwise their position may be forfeited.

C. Counselling

The staff of the Institute is available for interviews with parents and prospective students in order to discuss the Institute's programmes, and to offer advice and help.

D. Aptitude Tests

Aptitude tests will be written by any or all students at the discretion of the Registrar.

II. FEES

A. Annual Fees

Total fees for the academic year 1966–67 are:—

	Tuition	Student Activity	Caution Account	Accident Insurance	Total
First year students—					
First term	$60.00	$15.00	$10.00	$5.00	$90.00
Second term	90.00	*Nil*	*Nil*	*Nil*	90.00
Second year students—					
Third term	60.00	15.00	10.00	5.00	90.00
Fourth term	90.00	*Nil*	*Nil*	*Nil*	90.00

1. Students re-entering the Institute for the second and fourth terms, after not attending the Institute for one or more terms, must pay a $10 student activity fee and a $10 caution account deposit and a $3.25 insurance fee.

2. All cheques and money orders must be payable to the B.C. Institute of Technology.

3. All fees are payable prior to the commencement of classes.

4. A student whose fees are not paid within 14 days after the commencement of each term will be excluded from classes and his registration cancelled.

5. If a student whose registration has been cancelled because of non-payment of fees applies for reinstatement and his reinstatement has been approved by his Department Head, he will be required to pay a reinstatement fee of $10 together with all outstanding fees before he is permitted to resume classes.

B. MISCELLANEOUS FEES

Application and registration	$5.00
Re-read of final marks	5.00
Transcript of marks	2.00
Duplicate diploma	3.00

C. WITHDRAWAL

Students who voluntarily withdraw from a programme may receive a refund of their fees at the discretion of the Principal. Students must withdraw officially through the Registrar's Office.

Students who are requested to withdraw from a course for reasons of discipline or unsatisfactory progress may forfeit any right to a refund under this section.

D. ADDITIONAL EXPENDITURES

1. *Textbooks, Instruments, and Supplies.*—The cost of textbooks, instruments, and supplies varies according to the programme, from approximately $60 to $125. Students may purchase many of the required supplies from the Institute bookstore. Students are advised not to purchase any textbooks or instruments until they have met with their instructors.

2. *Medical Insurance.*—Students may obtain medical insurance coverage by an arrangement with the British Columbia Medical Services Incorporated (MSI), a non-profit organization sponsored and underwritten by the doctors of British Columbia. The plan provides the following benefits:

(i) The services of a personal physician for necessary medical and surgical care at home, in the doctor's office, or in hospital. The services of a specialist when referred by the attending doctor.

(ii) Standardized laboratory services and diagnostic aids, including X-rays when ordered by the attending doctor.

(iii) Surgical care, including anæsthesia.

(iv) Such emergency medical and surgical care outside of the Province of British Columbia anywhere in the world,

when rendered by a physician and surgeon or doctor of medicine (M.D.) duly qualified and licensed to practise, as becomes necessary while the subscriber or registered dependent is travelling or on vacation outside the said Province.

A special rate for students covers the period September 1, 1966, to August 31, 1967. Students will be able to transfer from their parents' medical coverage on reaching their 21st birthday. Payments are to be made to the Bursar. A pamphlet outlining the details of the contract is available upon request.

III. FINANCIAL ASSISTANCE

A. Government of British Columbia Scholarships

This award is available for the current year to a student who undertakes a full-year programme at the British Columbia Institute of Technology. Candidates for awards applicable to the session 1967–1968 will be considered on the basis of standing received in the final examinations in a full session for 1966–1967. Candidates at the British Columbia Institute of Technology must take the final examinations set by the Institute in June; those in Grade XII or XIII must write the examinations set in June by the British Columbia Department of Education, and make application at the principal's office of the secondary school attended. Eligible applicants who obtain first-class standing will be granted one-half the tuition fee. Awards of one-third the tuition fee will also be made to the Province's top 2,000 second-class students.

B. British Columbia Institute of Technology Scholarship and Bursary Fund

The British Columbia Institute of Technology Scholarship and Bursary Fund has been established through private means, whereby awards are made annually by the trustees of the Fund to deserving students of the Institute. Private contributions from commerce and industry and other interested persons are being received and may or may not be designated for use in encouraging study in a particular course of study given by the Institute. Such contributions will be deductible for income-tax purposes. Pages 57 to 59 contain the details of the contributions to March 1, 1966. Inquiries concerning financial aid should be directed to the office of the Registrar.

C. The Canada Student Loans Plan

The maximum that may be obtained under this plan is $1,000 per year and not more than $2,000 over two years. Students applying for the loan must satisfy resident requirements and demon-

strate need of financial aid. Loans are interest free while the student is in school, and are repayable with interest beginning six months after graduation. All full-time technical students are eligible for assistance under the Canada Student Loans Plan.

For application forms and further information inquire at the Registrar's Office.

IV. PLACEMENT SERVICE

The Institute assists students to obtain placement both during the summer vacation and after graduation. The service is under the direction of the Placement Officer. He arranges interviews with prospective employers, and opportunities for employment are brought to the attention of students and graduates looking for positions.

To meet the increasing need of an effective placement service for all students, the Vancouver office of the National Employment Service has established a branch employment office at the Institute.

V. LIVING ACCOMMODATION

There are no dormitories connected with the Institute. Students may obtain room and board in the vicinity of the campus at a reasonable rate. A list of accommodations may be obtained from the Registrar's Office. Board and room will cost approximately $70 to $90 a month. An excellent cafeteria provides economical services for students.

VI. ACADEMIC AWARDS

A. Diplomas (Dipl.T.)

Graduates of the British Columbia Institute of Technology will be awarded a nationally recognized Diploma of Technology. An honours diploma will be awarded to those students who obtain a first-class honours standing (80 per cent average or better) in each of Terms 3 and 4. Duplicate diplomas will be issued on payment of a fee of $3.

B. The British Columbia Institute of Technology Honour Awards

One gold and two silver rings will be awarded to students in their graduating year who, in the opinion of the Selection Committee, combine to the greatest extent academic and technical ability, social and athletic interest, good character and personality.

C. Convocation Exercises

Convocation exercises take place as announced in the yearly academic calendar, and diplomas are presented only at these exercises.

VII. THE CURRICULUM

A. Programme of Studies

The academic year consists of two separate consecutive terms. Examinations are written and credit is given for the successful completion of each term. Students may interrupt their studies after completion of any term. Permission by the Board of Admissions is required before a student is allowed to change his programme, and only one transfer is permitted.

B. Final Examinations

Final examinations are conducted in December and June of each academic year. Students are personally responsible for presenting themselves at examinations on the scheduled day and hour. If a student is unable to produce a reason satisfactory to the Registrar for defaulting an examination, he is considered to have failed in that subject.

Unless a student has paid all fees and dues for which he is liable, has returned all borrowed Institute property, and attained requisite academic standing, he will not be allowed to write the final examinations. Students actually under medical treatment in the period immediately prior to the examinations are reminded that it is their responsibility to notify the Registrar that this situation exists, if it is likely to affect their attendance at examinations.

C. Determination of Standing

Final standing is determined on the basis of term work and the results of final examinations. A minimum of 50 per cent in each subject is required for a credit standing. Examination standing is computed according to the following schedule:

First class	80% or more
Second class	65% to 79%
Credit	50% to 64%
Failure	Below 50%

The symbol "A" (aegrotat) indicates that the student was absent from the final examination because of medical reasons but was granted standing on the basis of the year's work. "Aegrotat" standing may apply to all subjects or to a single subject. A copy of the final report is mailed to the student's home address as soon as possible after the results are known.

D. Failure and Repetition

A student who fails a term may be permitted to repeat the term only at the discretion of the Principal.

E. Appeals in Regard to Final Marks

Final examinations may be re-read if a written request is submitted to the Registrar within 10 days after the results are mailed to students. A fee of $5 is required for each paper which is appealed. This fee will be refunded in full if, as a result of re-reading, a passing grade is obtained in place of a failure.

F. Transcripts

A fee of $2 is charged for each transcript of an undergraduate's or graduate's marks. Transcripts are available from the Registrar's Office.

VIII. REGULATIONS REGARDING CONDUCT, DISCIPLINE, AND ATTENDANCE

It is assumed that all students enrolled at the British Columbia Institute of Technology come for a serious purpose, and that they will conform cheerfully to all regulations.

(*a*) Students are expected to conduct themselves in an exemplary fashion at all times and pay diligent attention to their studies. If the Principal believes a student's conduct is such that it is detrimental to the interest of the Institute, he may be excluded from further attendance. In assessing a student's capability, the Principal will take into consideration his conduct and attitude, both on and off the campus. A student who has been expelled or suspended will not be admitted to the Institute grounds or buildings.

(*b*) The Principal possesses the final authority to approve, amend, and/or revise the constitutions of all student organizations connected with the Institute. If the Principal believes it is in the interest of the Institute to do so, he has full authority to suspend the constitution of any student organization, to penalize the members of that organization, or to deal with any situation that arises in any manner he deems fit.

(*c*) The Institute cannot be held responsible for debts incurred by student organizations.

(*d*) No student group is permitted to participate in a parade in a public thoroughfare without the prior consent of the Principal.

(*e*) If, through his carelessness or negligence, a student damages the property of the Institute, he shall be held responsible. If the damage is caused by students whose names are not known, the cost of repairing the damage may be assessed equally among all students enrolled at the Institute.

(*f*) A student will not be permitted to borrow or remove any apparatus or tools except by the written authority of the Principal or his delegate.

(*g*) Consumption of intoxicating beverages is not permitted on property belonging to the Institute. Violation of this regulation may result in expulsion.

(*h*) General supervision over all forms of entertainment given under the auspices of a student organization come under the jurisdiction of the Principal.

(*i*) All students are required to dress in a neat and tidy manner in keeping with the dignity of the Institute. For men this means the wearing of the following attire on the campus:

(i) Shirt and tie.

(ii) Business suit, or sports coat or blazer with suitable trousers.

(iii) In laboratory and shops a laboratory coat, which will be supplied by the Institute, is worn in place of the coats or blazers mentioned in item (ii). Students who lose or damage laboratory coats will be charged a $5 replacement fee.

Women should be attired appropriately in accordance with the regulations for men.

(*j*) Regular attendance in lectures, seminars, and laboratory periods is required of all students. If a student is absent for any cause other than illness for more than 10 per cent of the time prescribed for any subject, he or she may be prohibited from writing the final examination in that subject. In case of illness or other unavoidable cause of absence, the student should communicate immediately with his department head, stating the cause of absence.

IX. CHANGES IN CURRICULA AND REGULATIONS

Although it is proposed to adhere to the programme of study as set forth in the Calendar, the Institute reserves the right to make, without prior notice, whatever changes are deemed necessary to either the programmes of study or the regulations. The Institute reserves the right to cancel any programme.

X. STUDENT ASSOCIATION

All students registered in the Institute are members of this Association. The governing body of the Association is the Students' Administrative Council, composed of officers elected by the student body. The Council represents the student body and administers student funds as outlined in the constitution of the Student Association.

XI. LOCKER FACILITIES

Full-length locker space is provided for the safe storage of personal effects. Students are warned to have identification marks—preferably names and addresses—on all their books, instruments, and other effects. All personal valuables should be kept on the student's person or secured in his locker. The Institute cannot accept responsibility for any loss of, or damage to, students personal property.

XII. LIBRARY

The Library, located on the second floor, contains 6,000 carefully selected volumes in all fields of the curriculum and in related sciences. Over 600 periodicals are currently received. The Library is "open stack," with free access to all holdings except for books in the reserve collection.

A handbook describing the facilities available and the regulations governing the use of the Library is given to each student during fall orientation.

XIII. AUDIO-VISUAL BRANCH

The Audio-Visual Branch provides motion-picture films, other instructional materials, and equipment through its three main divisions—Utilization, Production, and Engineering. It builds the Institute's own growing film library and arranges for rental, preview, and purchase of other films from major sources throughout the world. It provides faculty with reference services for film and other instructional materials and provides consultant and evaluative services on audio-visual applications. It supervises production of motion pictures and other teaching aids for the Institute's specialized use. It co-ordinates the planning and modification of audio-visual installations.

MEDICAL LABORATORY TECHNOLOGY

I. ENROLMENT

A. Conditions of Admission

1. The educational prerequisites for applicants with British Columbia educational standing are Senior Matriculation (Grade XIII) or First Year University level in:

English (literature and composition).
Mathematics (any two of algebra, trigonometry, or geometry).
Chemistry (general chemistry).
One other science—bacteriology, biology, zoology, or physics.
One other subject, preferably a second language.

2. Applicants with other than British Columbia educational standing should submit a transcript of marks for evaluation to The Registrar, Canadian Society of Laboratory Technologists, 99 Wentworth Street South, Hamilton, Ont. Two transcripts, together with two reports of this evaluation, must be submitted to the British Columbia Institute of Technology.

3. Candidates must be 17 years of age at day of registration. There is no upper age limit.

B. Procedure for Admission

1. Special application forms may be obtained from an associated training school or the Institute. Students are selected and enrolled by the individual training schools, the Institute acting as a clearing centre for all applications. Applicants are advised to list on the application forms their first, second, or further choice of the associated training school in which enrolment is sought.

2. Application forms MUST be completed in DUPLICATE. EACH copy MUST be accompanied by:

(*a*) An official transcript of all secondary (British Columbia) or high school or university marks showing necessary credits and grades for admittance; or

(*b*) A statement from the principal of the senior secondary school or head of the faculty stating that the applicant is expecting to obtain necessary credits and grades for admittance. THIS STATEMENT MUST BE SUBSTANTIATED BY AN OFFICIAL TRANSCRIPT WHEN IT BECOMES AVAILABLE.

3. A registration fee of five dollars ($5), payable by cheque or money order, must accompany the application. If your application is accepted, this fee is not refundable.

4. Completed applications should be forwarded to the Registrar of the Institute, to arrive not later than July 1, 1966.

5. Prior to final acceptance, a report of medical fitness and an immunization record will be required. Applicants will be informed of action to be taken.

II. FEES

1. The course fee is $200 (British Columbia Institute of Technology tuition fee $150, associated training school fee $50), payable as follows: $110 upon enrolment at the associated training school and $90 in January, 1967, at the Institute.

2. A trainee membership fee of $10 must be paid to the Canadian Society of Laboratory Technologists on registration at the associated training school.

3. Toward the end of the training course an examination fee of $50 will be payable to the Canadian Society of Laboratory Technologists.

4. *Refunds.*—(*a*) Students who voluntarily withdraw from the programme may receive a refund of the course fee at the discretion of the Principal and the administration of the associated training school. Students must withdraw officially through the Registrar's Office.

(*b*) Students who are requested to withdraw for reasons of discipline or unsatisfactory progress may forfeit any right to refund.

III. ADDITIONAL EXPENDITURES

1. Approximately $10 for textbooks and stationery.

2. A student activity fee of $15, a caution fee of $10, and an accident insurance fee of $5 will be charged.

IV. ADDITIONAL INFORMATION

A. Examinations

1. Practical and written examinations will be held at the end of tuition in each subject as stated in the course outline. Final standing at the Institute is determined on the basis of term work and the results of examinations.

2. Qualifying examinations of the Canadian Society of Laboratory Technologists will be conducted at the Institute.

B. Progress and Conduct

Students whose progress is unsatisfactory will be reported to their associated training school and may be required to withdraw from the course. The Institute reserves the right to suspend students for infraction of regulations, as published, governing conduct, discipline, and attendance.

MEDICAL RADIOGRAPHY TECHNOLOGY

I. ENROLMENT

A. Conditions of Admission

1. Applicants must have at least Junior Matriculation (University Programme). Credits in physics and chemistry are desirable. Preference will be given to candidates with higher educational standing.

2. Students must be 17 years of age at day of registration and of good physical and mental health.

3. Male and female students will be accepted for training.

B. Procedure for Admission

1. Special application forms may be obtained from an associated training school or the Institute. Students are selected and enrolled by the individual training schools, the Institute acting as a clearing centre for all applications. Applicants are advised to list on the application forms their first, second, or further choice of the training school in which enrolment is sought.

2. Application forms MUST be completed in DUPLICATE. Each copy MUST be accompanied by:

(*a*) An official transcript of all secondary (British Columbia) or high school or university marks showing necessary credits and grades for admittance; or

(*b*) A statement from the principal of the senior secondary school or head of the faculty stating that the applicant is expecting to obtain necessary credits and grades for admittance. THIS STATEMENT MUST BE SUBSTANTIATED BY AN OFFICIAL TRANSCRIPT WHEN IT BECOMES AVAILABLE.

3. A registration fee of five dollars ($5), payable by cheque or money order, must accompany this application. If your application is accepted, this fee is not refundable.

4. Completed applications should be forwarded to the Registrar of the Institute, to arrive not later than May 1, 1966, for the Fall 1966 class, or July 1, 1966, for the Spring 1967 class.

5. Prior to final acceptance a report of medical fitness and an immunization record will be required. Applicants will be informed of action to be taken.

II. FEES

1. The course fee is $125 (British Columbia Institute of Technology tuition fee $75, associated training school fee $50), payable upon registration at the associated training school.

2. A student registration fee of $15, plus $2 for a student kit, must be paid to the Canadian Society of Radiological Technicians (British Columbia Division) on registration at the associated training school. The annual membership fee for students is $4.

3. An examination fee of $20 is payable to the Canadian Society of Radiological Technicians prior to writing the certification examination. This examination is held the first Saturday in May and November each year.

4. *Refunds.*—(*a*) Students who voluntarily withdraw from the programme may receive a refund of the course fee at the discretion of the Principal and the administration of the associated training school. Students must withdraw officially through the Registrar's Office.

(*b*) Students who are requested to withdraw for reasons of discipline or unsatisfactory progress may forfeit any right to refund.

III. ADDITIONAL EXPENDITURES

1. Approximately $50 for textbooks.

2. A student activity fee of $10, a caution fee of $10, and an accident insurance fee of $5 (subject to change) will be charged.

IV. ADDITIONAL INFORMATION

A. Examinations

Practical and written examinations will be held at the end of tuition in each subject as stated in the course outline.

Final standing at the Institute is determined on the basis of the term work and the results of the examinations.

B. Progress and Conduct

Students whose progress is unsatisfactory will be reported to their associated training schools and may be required to withdraw from the course. The Institute reserves the right to suspend students for infraction of regulations, as published, governing conduct, discipline, and attendance.

Evening Programmes

The Institute offers a number of advanced technical courses in the evening between September and May.

As the demand grows, the Institute, in co-operation with industry through its Advisory Committees, will expand the number of subjects offered to satisfy the post-secondary technical training needs of almost every segment of trade, commerce, and industry.

Three types of programme are offered:

(1) A credit programme, providing for those employed in industry or commerce who wish to proceed toward a Diploma of Technology.

(2) Tutorial programmes, which will be developed in co-operation with organizations having established qualifying examinations in any field closely related to the Institute's regular programmes.

(3) Specialized courses, to be offered where a demonstrated demand exists for post-secondary training or retraining, and where the Institute's resources provide the quality of training required.

In order to obtain a brochure outlining in detail the courses offered in this evening class programme, please contact the Vice-Principal (Evening Classes) at the Institute.

British Columbia Institute of Technology
Scholarship and Bursary Fund

BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY SCHOLARSHIP AND BURSARY FUND

AMERICAN SMELTING AND REFINING COMPANY ($100)

The American Smelting and Refining Company will award a $100 bursary or scholarship to a student in the Mining Technology.

AMERICAN SOCIETY FOR METALS ($150)

The American Society for Metals will award a $150 bursary or scholarship to a student in the Chemical and Metallurgical Technology.

BRITISH COLUMBIA FOREST PRODUCTS LIMITED ($500)

British Columbia Forest Products Limited will award two $250 scholarships to second-year students—one in the Forest Products Technology and one in the Instrumentation and Control Technology.

BRITISH COLUMBIA HOTELS ASSOCIATION ($500)

The British Columbia Hotels Association will award bursaries or scholarships in the total amount of $500 to students in the Hotel, Motel and Restaurant Technology.

THE BRITISH COLUMBIA SUGAR REFINING COMPANY, LIMITED ($250)

The British Columbia Sugar Refining Company, Limited, will award a $250 scholarship or bursary.

CANADIAN INSTITUTE OF MINING AND METALLURGY

The Canadian Institute of Mining and Metallurgy will award a $150 scholarship or bursary to a student in the Gas and Oil Technology or the Chemical and Metallurgical Technology.

The Canadian Institute of Mining and Metallurgy will award a $40 book prize.

CANADIAN FOREST PRODUCTS LTD. ($500)

The donation has been directed to a deserving student at the Institute of Technology to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

DR. GORDON J. CHAPMAN ($40)

The donation has been directed to a deserving student at the Institute of Technology to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

THE CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA, LIMITED ($400)

The Consolidated Mining and Smelting Company of Canada, Limited, will award one scholarship of $200 to a student in the Mining Technology and one scholarship of $200 to a student in the Chemical and Metallurgical Technology.

CROWN ZELLERBACH CANADA FOUNDATION ($1,000)

The Crown Zellerbach Canada Foundation will award four $250 bursaries. Students in the Forestry, Forest Products Utilization, Survey, Mechanical, Electrical and Electronics, Chemical and Metallurgical, Instrumentation and Control, and Business Management Technologies are eligible for these awards.

ELECTRIC REDUCTION COMPANY OF CANADA, LTD. ($100)

The Electric Reduction Company of Canada, Ltd., will award $100 to a second-year student in the Chemical and Metallurgical Technology.

ELECTRO TEC MARKETERS, LTD. ($75)

Electro Tec Marketers, Ltd., will award a $75 bursary to a student in the Electrical and Electronics Technology.

FALCONBRIDGE NICKEL MINES LIMITED ($300)

Falconbridge Nickel Mines Limited will award bursaries or scholarships in the total amount of $300 to students in the Mining or Surveying Technologies.

HOOKER CHEMICALS LIMITED ($100)

The donation has been directed to a deserving student at the Institute of Technology to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

INDUSTRIAL COATINGS LTD. ($300)

Industrial Coatings Ltd. will award a bursary or bursaries in the total amount of $300 to a student or students in the Mechanical Technology.

INTERNATIONAL NICKEL COMPANY OF CANADA, LIMITED

The Inco Scholarship Fund at the British Columbia Institute of Technology provides for the awarding of one or more scholarships annually. The awards, valued at a minimum of $100 to a maximum of $250, are known as the International Nickel Scholarships in Engineering Technology.

Any student with a good scholastic record and a good personal reputation, who has the necessary qualifications to enrol in a diploma course in Engineering Technology, is eligible to apply for an Inco scholarship.

Interested students should apply directly to the Registrar at the British Columbia Institute of Technology.

MACMILLAN, BLOEDEL AND POWELL RIVER LIMITED ($500)

MacMillan, Bloedel and Powell River Limited will award one scholarship of $250 to a student in the Forestry Technology and one scholarship of $250 to a student in the Forest Products Technology.

MERRILL GARDNER LTD. ($50)

The donation has been directed to a deserving student at the Institute of Technology to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

J. A. O'BRIEN ($137)

The donation has been directed to a deserving student at the Institute of Technology to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

PACIFIC LOGGING COMPANY LIMITED ($150)

The donation has been directed to a deserving student at the Institute of Technology to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

PLACER DEVELOPMENT, LIMITED ($1,750)

Placer Development, Limited, will award five $350 scholarships to students in the Chemical and Metallurgical, Mining, and Surveying Technologies.

RAYONIER CANADA (B.C.) LIMITED ($1,050)

Rayonier Canada (B.C.) Limited will award three $350 scholarships—two scholarships to the Forest Products Technology (one scholarship will be given in the Wood Option and one scholarship will be given in the Pulp and Paper Option) and one scholarship to the Forestry Technology. The awards are available to students who have completed their first year of their course and are proceeding into the second year.

SANDWELL AND COMPANY LIMITED ($250)

The donation has been directed to a deserving student at the Institute of Technology to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

TAHSIS COMPANY, LTD. ($500)

The donation has been directed to a deserving student at the Institute of Technology to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

WRIGHT ENGINEERS LIMITED ($250)

Wright Engineers Limited will award one $250 scholarship or bursary to a student in the Mechanical Technology.

JACK WOODWARD MEMORIAL SCHOLARSHIP AND BURSARY FUND

The Jack Woodward Memorial Scholarship and Bursary Fund has been established to honour the memory of the late Head of the Chemical and Metallurgical Technology.

Advance Prerequisites (Effective September, 1967)

GENERAL PREREQUISITE

Students seeking admission must have fulfilled the requirements for graduation from senior secondary school on the Academic and Technical Programme prescribed by the Department of Education for the Province of British Columbia.

SPECIAL PREREQUISITES BY TECHNOLOGY

		Building	Chemical and Metallurgical	Civil and Structural	Electrical and Electronics (Plus Broadcast Tech.)	Food	Forest Products	Forestry
Mandatory	A. & T. Prog.	Ma 12 *	Ma 12 *	Ma 12 *	Ma 12 *	Ma 12 *	Ma 12 *	Ma 12 Bi 11
	Other Progs.	Dra 11	Dra 11	Dra 11	Dra 11		Dra 11	Dra 11
Desirable†	A. & T. Prog.	Chem 11			Ec 11	Bi 11		Phys 11
	Other Progs.	Dra 12 Const 11 Const 12A Const 12B	Mech 11	Dra 12 Const 11 Const 12A Const 12B Mech 11	Mech 11 Elect 11 Ind Power 11		Ind Power 11 Gen Bus 11 Gen Bus 12	Ind Power 11 Gen Bus 11 Gen Bus 12

		Natural Gas and Petroleum	Instrumentation	Mechanical	Mining	Surveying	Broadcast Communications	Business	Hotel, Motel Management
Mandatory	A. & T. Prog.	Ma 12 *	Ma 12 *	Ma 12 *	Ma 12 *	Ma 12 *	Hist 12 Eng Lit 12	Ma 12	Ma 12
	Other Progs.	Dra 11	Dra 11	Dra 11 Mech 11	Dra 11	Dra 11			
Desirable†	A. & T. Prog.						Ec 11	Fr 11 Eng Lit 12 Ec 11	Fr 11 Eng Lit 12 Ec 11
	Other Progs.		Mech 11	Elect 11 Dra 12			Typ 11 Any Theatre Specialty Courses	Any Accountancy Specialty Courses	Foods 11 Foods 12 Any Accountancy Specialty Courses

* Any three of Physics 11, 12 and Chemistry 11, 12.

† Desirable subjects are not to be construed as mandatory for selection purposes. However, they would be an aid as background material.

INTERIM PREREQUISITES

During the interim period of 1966–67, some senior secondary schools in British Columbia may not have completed the conversion to the revised curriculum.

For this interim period only, the Institute may consider as sufficient prerequisite the appropriate one-year senior secondary school course which has been offered at the school at which the applicant studied. For example:—

Chemistry 11 or Chemistry 91.

Physics 11 or Physics 91.

Biology 11 or Biology 91.

Law 11 or Law 93.

Economics 11 or Economics 92.

Expansion
Programme

To Be Completed by September, 1967

An expansion programme is under way which will double the student capacity of the British Columbia Institute of Technology. The planning for this expansion is well advanced, and construction is expected to begin soon. The new buildings should be completed before the fall of 1967, in time for the enlarged student enrolment expected at that time.

One part of the expansion will be a new wing which will add 162,000 square feet to the present building. Included in this wing will be three large lecture theatres, well-equipped teaching laboratories, and addjtional classrooms.

Another part of the expansion will be a library, which is scheduled for completion late in 1966. This library will serve all students on the campus, including those enrolled in the British Columbia Vocational School, the Vocational Teachers' Training College, and the British Columbia Institute of Technology. The Library Building will also house an Audio-Visual Department, a bookstore, and the Vocational Curriculum Development Branch.

An Auditorium-Gymnasium building to serve the students is also in the planning stage. Careful study is being made of new and original designs for this facility.

Other aspects of the expansion programme include an addition to the Boilerhouse-Mechanical building and extensive alterations to the present Institute building, in order to accommodate new technologies and the expansion of existing technologies in 1967.

In the Institute's two years of operation, it has become apparent that the present school accommodation is inadequate to train all the students who wish to become technicians. Many of the existing technologies have received many more student applications than could be accommodated. Therefore, existing technologies are being expanded and new technologies are being established.

With this additional capacity and as a result of a greatly increased number of applications anticipated by 1967, the first-year registration should double.

The following new technologies or options are planned to begin in 1967:

Technical Management Option: A new technology in the business group, combining engineering and management skills.

Food Production Option: A new option in the Food Technology.

Paramedical Programmes: To train the following: Medical, electronics, and instrumentation technicians; public health inspectors; medical record technicians; radio-

active isotopes technicians; diploma nursing course; medical research technicians.

Photogrammetry Option: A new option in the Surveying Technology.

Restaurant and Catering Option: In the Hotel, Motel and Restaurant Technology.

The expansion of existing technologies is based upon research, which has indicated that an increased number of students will be available in the fall of 1967. Provision will be made to double and, in some technologies, triple present enrolments. It is expected that the supply of students will match the increased numbers of seats available in each technology.

The planned increases in these technologies is also based on the ability of British Columbia industry to find positions for graduates.

General prerequisite for proposed technologies will be graduation on the British Columbia Academic and Technical Programme, or equivalent.

List of Programmes

BROADCAST COMMUNICATIONS

BUILDING TECHNOLOGY

BUSINESS MANAGEMENT

CHEMICAL AND METALLURGICAL TECHNOLOGY

CIVIL AND STRUCTURAL TECHNOLOGY

ELECTRICAL AND ELECTRONICS TECHNOLOGY

FOOD TECHNOLOGY

FOREST PRODUCTS TECHNOLOGY

FORESTRY TECHNOLOGY

NATURAL GAS AND PETROLEUM TECHNOLOGY

HOTEL, MOTEL AND RESTAURANT MANAGEMENT

INSTRUMENTATION AND CONTROL TECHNOLOGY

MECHANICAL TECHNOLOGY

MEDICAL LABORATORY TECHNOLOGY

MEDICAL RADIOGRAPHY TECHNOLOGY

MINING TECHNOLOGY

SURVEYING TECHNOLOGY

Broadcast Communications

The need for educational facilities in broadcast communications has long been recognized by the industry in Canada. This is particularly true in Western Canada, for the programme in the British Columbia Institute of Technology is the first to be offered in this area and only one other programme exists in Canada.

The broadcasters of this Province lend their whole-hearted support to this programme; moreover, an industry committee was deeply involved in the formulation of the Broadcast Communications programme.

With new radio and television stations coming on the air every year, the demand for trained personnel continues to rise. To give training with a strong emphasis on the practical aspects, a complete radio and television station was established in the Institute. The Broadcast Communications programme is a realistic one, offering authentic on-the-job training and experience within the Institute, with students working in actual radio and television production for months before they go into industry.

The programme offers two distinct two-year options—Production and Technical. Each includes both radio and television.

Students in the Production Option receive training in all non-technical areas of broadcasting. In addition to tuition in announcing, writing, news operations, recording, and radio and television production, students are given a thorough knowledge of the use and operation of all broadcasting equipment.

On the other hand, Technical Option students are given a complete electronics programme, coupled with extensive practical training in the maintenance and repair of all radio and television broadcasting equipment in both studio and transmitter operations. During the second year, students gain on-the-job training by devoting 40 per cent of their time to working with radio and television equipment.

Graduates in the Production Option can expect to be employed as announcers, writers, operators, news editors and reporters, and in other production jobs in radio or television. Those from the Technical Option will find employment as transmitter or studio maintenance technicians and in other areas of both radio and television operations.

To be successful, students in Broadcast Communications must possess a real interest for this demanding field. Although personality requirements vary somewhat, the out-going person is better suited to those positions in which meeting the public is of great importance. Shift work is common in the industry, since both radio and television stations operate most of the day and night. A sound knowledge of English is essential for the Production Option; competence in mathematics and physics is required for the Technical Option.

To graduates, the industry offers interesting, challenging, and rewarding work, with ample opportunity for advancement.

BROADCAST COMMUNICATIONS

PRODUCTION OPTION

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.103	Writing and the Mass Media	2	1
32.104	Statistics	2	3
90.135	Economics	2	2
91.110	Broadcast Production	3	8
91.109	Introduction to News	2	....
91.101	Elementary Broadcast Technology	2	2
91.103	Writing and Sales	1	2
	Tutorials	....	3
		14	21

Term 2

31.203	Writing and the Mass Media	2	1
90.235	Economics	2	2
90.260	Basic Law for Broadcasting	2	—
91.209	Introduction to News	2	2
91.210	Broadcast Production	3	7
91.201	Elementary Broadcast Technology	2	2
91.203	Writing and Sales	1	2
90.230	Business	1	1
	Tutorials	....	3
		15	20

YEAR 2 — *Term 3*

31.303	Writing and Modern Literature	2	1
91.305	Contemporary History	2	....
91.309	News	2	2
91.303	Writing and Sales	2	2
91.302	Production—Radio	2	7
91.312	Production—Television	4	7
	Tutorial	....	2
		14	21

Term 4

31.403	Writing and Modern Literature	2	1
91.405	Contemporary History	2	....
91.409	News	2	2
91.403	Writing and Sales	2	2
91.402	Production—Radio	2	7
91.412	Production—Television	4	7
	Tutorial	....	2
		14	21

General Prerequisite: Graduation on the University Entrance Programme.

‡ *Special Prerequisite:* One of the following—History 91, Geography 91, Economics 92, Law 93, English 91.

Subjects Desirable but Not Essential (*see* General Requirements under Enrolment): Major in Mathematics; Physics.

‡ NOTE.—*See* page 60 for prerequisites effective September, 1967.

BROADCAST COMMUNICATIONS

TECHNICAL OPTION

No.	Subject	Hours per Week Lec.	Lab.
	YEAR 1 *Term 1*		
31.101	Writing and Contemporary Thought	2	1
32.102	Mathematics	5	4
33.101	Physics	3	3
43.102	Electrical Circuits	5	5
49.101	Draughting		3
91.101	Elementary Broadcast Technology	2	2
		17	18
	Term 2		
31.201	Writing and Contemporary Thought	2	1
32.202	Mathematics	5	4
33.201	Physics	3	3
43.202	Electrical Circuits	3	2
43.223	Electronic Circuits	2	2
91.201	Elementary Broadcast Technology	2	2
	Tutorials		4
		17	18
	YEAR 2 *Term 3*		
31.301	Writing and Contemporary Thought	1	1
32.302	Mathematics	3	2
43.303	Measurements, Electrical and Electronic	1	3
43.323	Electronic Circuits	3	5
43.324	Communications	3	3
91.315	Workshop—Television and Radio	3	7
		14	21
	Term 4		
90.230	Business	1	1
43.425	Pulse Circuits	2	2
43.427	Microwave Techniques	2	2
43.428	Digital Techniques	2	2
43.419	Special Projects and Tutorials		5
91.414	Radio and Television Transmission	1	2
91.415	Workshop—Television and Radio	4	9
		12	23

General Prerequisite: Graduation on the University Entrance Programme.

‡ *Special Prerequisites:* Mathematics 91; Physics 91.

Subjects Desirable but Not Essential (*see* General Requirements under Enrolment): Chemistry; Industrial Arts, 90 Series.

‡ NOTE.—*See* page 60 for prerequisites effective September, 1967.

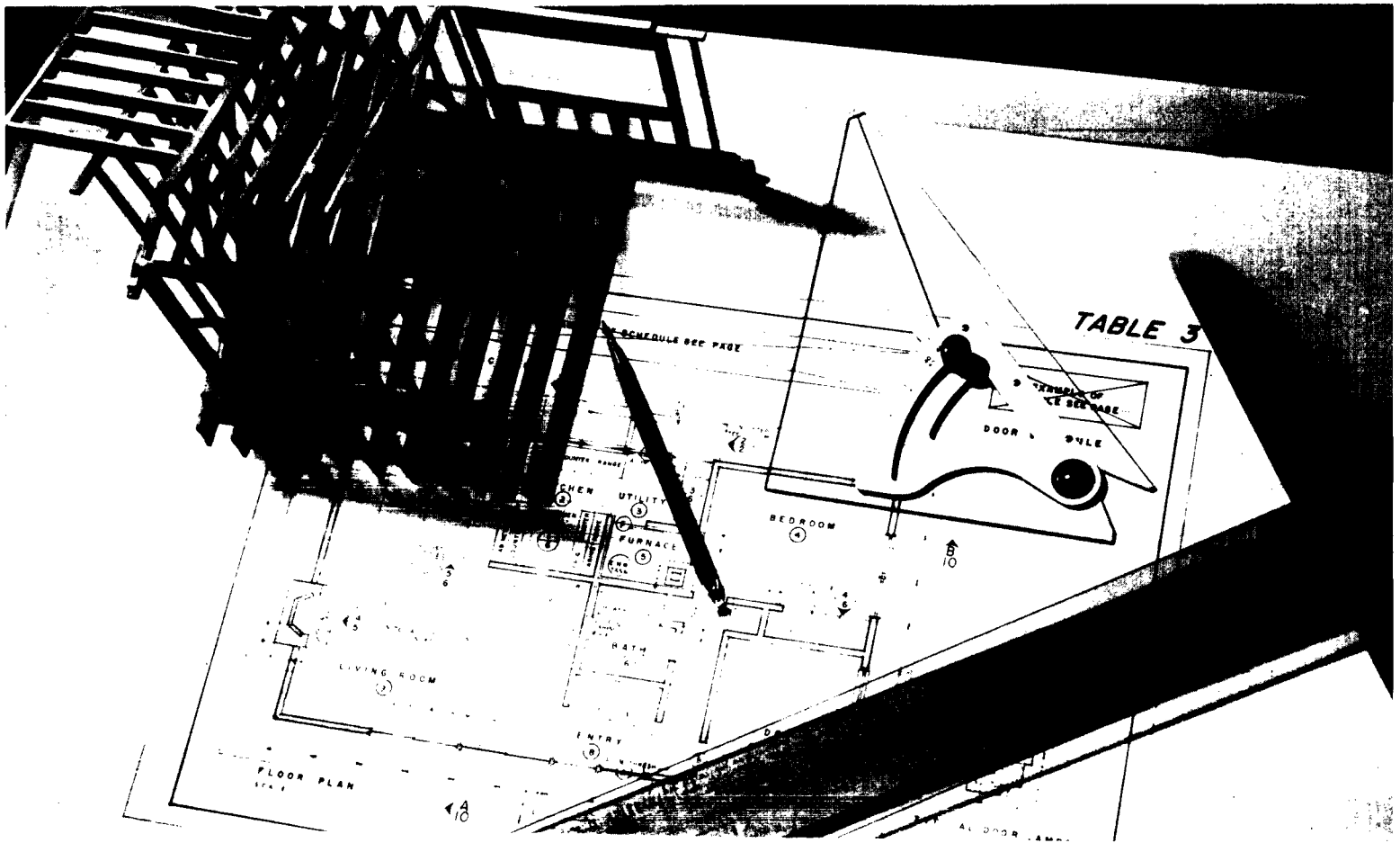


TABLE 3
SCHEDULE SEE PAGE
DOOR
STYLE
KITCHEN
UTILITY
FURNACE
BEDROOM
LIVING ROOM
BATH
ENTRY
FLOOR PLAN

Building Technology

Throughout the world rapidly expanding populations have enormously increased the demand for building operations of all kinds, and the course in Building Technology is designed to give a sound preparation in as broad a range of related material as the time allows.

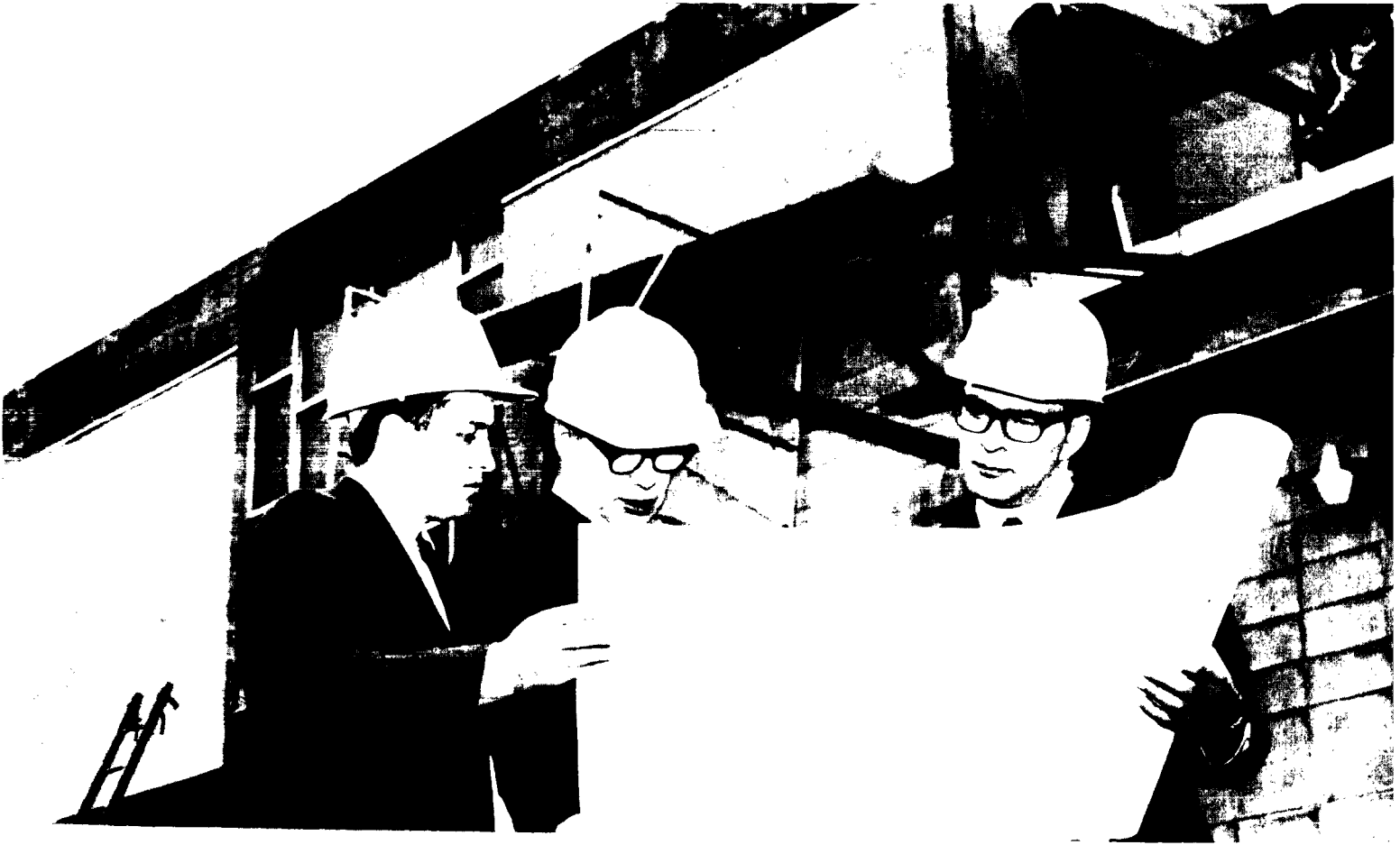
In addition to continuing such basic high-school subjects as physics, mathematics, and English, which are essential in acquiring any degree of technical proficiency, the course introduces students in the first year to various specialized subjects such as architectural design, building construction, structural engineering, mechanical and electrical services, and surveying. All these subjects contain both lecture and draughting-room instruction, and, as a result, students find they can further their education through their summer employment, being capable of working as draughtsmen in architects' and engineers' offices, as well as in the offices of various sub-trade and general contracting organizations.

In the second year, students continue with the major subjects listed above, but in addition begin a thorough coverage of such subjects as materials of construction, specification writing, quantity and cost estimating, work study, and similar subjects which further expand the number of possible areas into which they may move successfully on graduation.

Fundamentally, graduate technologists will understand buildings three-dimensionally, with all their architectural, structural, and mechanical implications, and with this as a point of departure may enter any area of the building, or related, field to which their individual interests and qualifications lead them.

We envisage graduates, after a suitable period of practical experience, becoming chief draughtsmen in a variety of offices; specification writers; estimators with architectural engineering, contracting, quantity surveying, manufacturing, or other offices; building inspectors; officials in real-estate or property management departments of major business firms or industries; appraisers and assessors in private and governmental offices; expediters, senior clerks, office managers in contractors' offices; superintendents of construction for architects, engineers, general or sub contractors; partners in construction organizations, particularly sub-trades; agents for manufacturers of building supplies and equipment; technicians in private or governmental building laboratories or agencies; teachers and instructors in public schools and universities, to name the more obvious possibilities.

In general, this course is creating a supply of highly qualified "assistant administrators" who will fill positions in the building world which lie between the professional architect, engineer, and contractor on the one hand and the vocationally trained draughtsman and tradesman on the other.



BUILDING TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.101	Writing and Contemporary Thought	2	1
32.101	Mathematics	3	2
33.101	Physics	3	3
40.101	Design and Draughting	1	4
40.102	Building Construction	4	4
40.103	Building Services	1	2
40.104	Building Regulations	1	...
42.120	Building Structures	2	2
		17	18

Term 2

31.201	Writing and Contemporary Thought	2	1
32.201	Mathematics	3	2
33.201	Physics	3	3
40.201	Design and Draughting	1	4
40.202	Building Construction	2	4
40.203	Building Services	2	1
51.202	Surveying	1	2
42.220	Building Structures	2	2
		16	19

YEAR 2 — *Term 3*

31.301	Writing and Contemporary Thought	1	1
40.301	Design	1	3
40.302	Building Construction	2	5
40.303	Building Services	2	2
40.305	Materials and Specifications	3	...
40.306	Construction Management	3	1
42.320	Building Structures	1	4
90.230	Business	2	1
	Tutorials	...	3
		15	20

Term 4

31.401	Writing and Contemporary Thought	1	1
40.401	Design	1	3
40.402	Building Construction	2	5
40.403	Building Services	2	3
40.405	Materials and Specifications	2	1
40.407	Estimating	3	1
42.420	Building Structures	1	4
90.190	Work Study	1	1
	Tutorials	...	3
		13	22

‡ *General Prerequisite:* Graduation on the University Entrance Programme.

Special Prerequisites: Mathematics 91, Physics 91.

Subjects Desirable but Not Essential (*see* General Requirements under Enrolment): Industrial Arts, 90 Series; Chemistry.

‡ NOTE.—*See* page 60 for prerequisites effective September, 1967.

Business Management

The accelerated development in recent years of scientific knowledge and industrial productivity has increased the complexity of modern business. This has stimulated competition to a very high degree, and in order to maintain its ability to compete, management has had to rely on a more scientific approach to managing. Specialists in many fields are employed to gather, analyse, interpret, and present information for management's use. With the increasingly specialized nature of modern business, young persons about to enter business must not only be eager, intelligent, and hard working, but must have specialized training as well. The curriculum of the Business Management programme embraces the technical nature of management practices, and consequently graduates from this programme are in high demand by prospective employers. Students will follow a prescribed course in one of the following options.

Accounting Option

The Accounting Option will enable students to specialize in this important and growing field. The techniques of cost accounting, financial analysis, and management control are developed to provide students with the required training to fill the many positions available in these fields. Graduates from this option have the opportunity to accept employment at an intermediate level and, if they desire, are in a favourable position to further their training with the professional accounting bodies in British Columbia..

Administrative Management Option

The Administrative Management Option will enable students to concentrate their studies in the growing and dynamic aspects of modern management services in the large and well-organized enterprise or in a wide range of activities in the equally challenging field of small business. Job opportunities are abundant in both of these fields, and students taking this option will have a sound base upon which to build a future leading to the many interesting administrative management aspects of the business world.

Computer Programming and Systems Option

The development of the computer in the last 10 years has provided the technical means which have made many of the present sophisticated techniques of management feasible. This field is probably the fastest-growing area in business, and students graduating in this option will be proficient in the design of systems using modern business machines and electronic computers. They will find many challenging and rewarding opportunities as operators, programmers, or systems analysts.

Marketing Option

The revolution in marketing calls for new emphasis in training to take advantage of the many satisfying job opportunities in buying, merchandising, retailing, industrial sales, advertising, and sales promotion. These occupations present as great a challenge to ambition and rewards for accomplishment as almost any other field of endeavour.

Technical Management

Industrial technology is progressing even more rapidly and has created a demand for the man trained in both management methods and the basic engineering principles. Graduates of this programme are expected to find initial employment in industrial engineering or methods offices, technical sales or purchasing, cost analysis or estimating. These careers should lead toward a position in management.

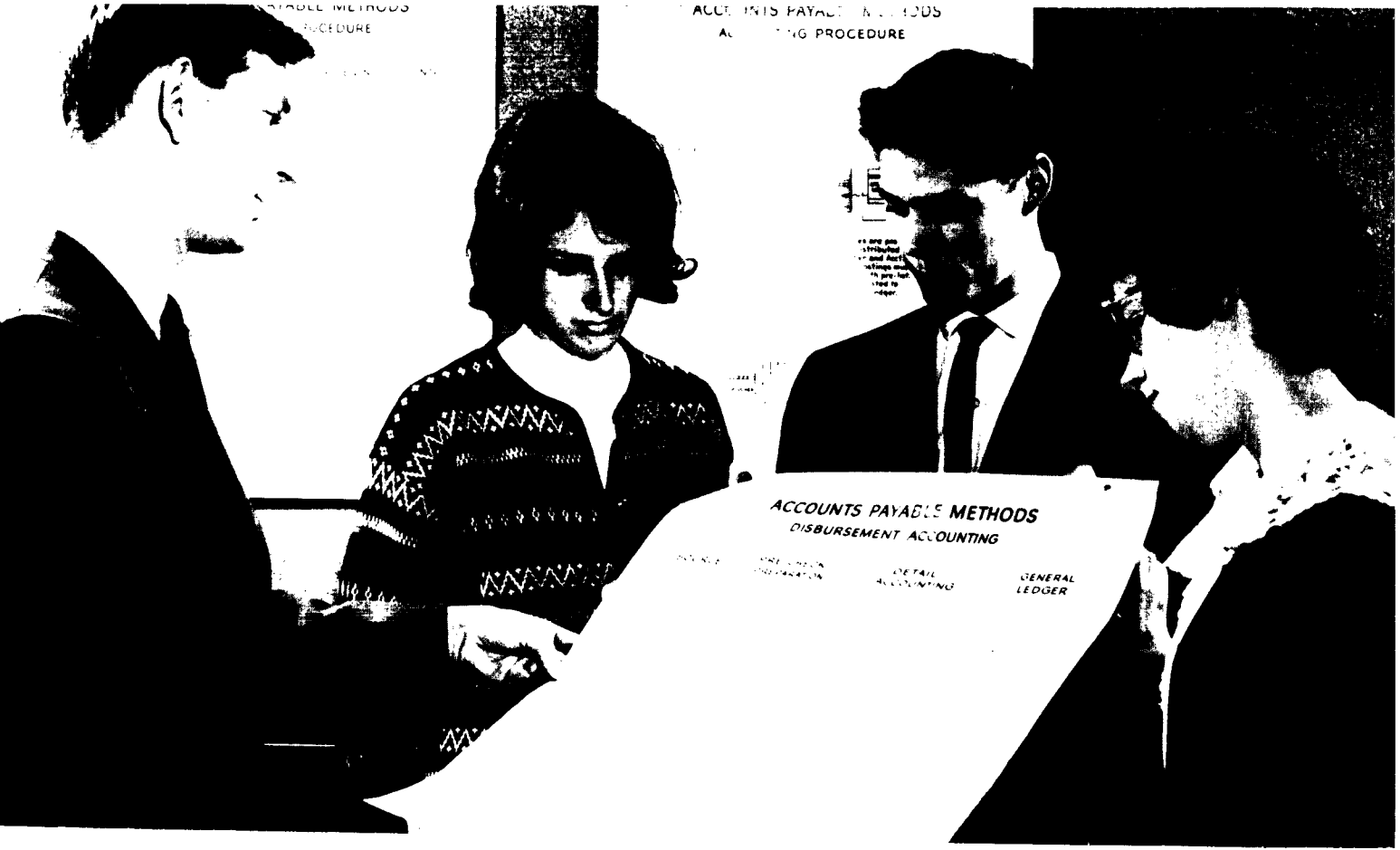
Accounting Option

Recent changes in business have revolutionized the concept of accounting. Until a few years ago the emphasis in accounting was upon the recording of business transactions. Today the accountant spends more time interpreting financial statements and giving advice to management on the important financial and control decisions that every organization has to take. This trend has been accentuated by the impact of the computer, which has automated the keeping of records.

The job descriptions in the accounting field include among others that of company accountant, treasurer, credit manager, government auditor, internal or external auditor, cost analyst, cost accountant, and budget analyst. Large organizations maintain departments to perform the accounting functions of financial accounting, cost accounting, internal audit, and budget preparation. Many jobs are open in these departments at the middle management level.

The Accounting Option is designed to provide a general business background in the first year. The second year of the programme provides increasing specialization in the accounting field. The financial accounting course builds on the basic knowledge gained in the first-year accounting course and enables the student to accept employment at the intermediate level upon graduation. The auditing course takes advantage of the knowledge the student has gained in programming and contains special coverage of the audit of electronic data-processing installations. A two-term cost and managerial accounting course reinforces accounting knowledge in these areas for graduates who wish to make a career in industry.

That the graduate can enter accounting positions upon leaving the British Columbia Institute of Technology does not mean that his training should be considered at an end. The professional accounting bodies in British Columbia now recognize the need for education beyond the high-school level for those wishing to enter into training with them, and the graduate who wants to take this training is in an advantageous position as a result of the courses he has taken at the Institute.


ACCOUNTS PAYABLE METHODS
DISBURSEMENT ACCOUNTING
DETAIL
ACCOUNTING
GENERAL
LEDGER

BUSINESS MANAGEMENT

ACCOUNTING OPTION

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.102	Business Writing and Contemporary Thought	2	1
90.103	Business Mathematics	3	3
90.131	Management in Industry	1	1
90.135	Economics	2	2
90.140	Accounting	2	3
90.150	Introduction to Data Processing	1	3
90.170	Marketing	2	1
90.182	Office Systems and Equipment	1	2
	Tutorials	...	5
		14	21

Term 2

31.202	Business Writing and Contemporary Thought	2	1
90.204	Business Statistics	2	3
90.235	Economics	2	2
90.240	Accounting	2	3
90.250	Computer Programming	2	4
90.245	Credit and Collections	2	1
90.270	Marketing	2	1
90.296	Systems and Procedures	1	2
	Tutorials	...	3
		15	20

YEAR 2 — *Term 3*

90.190	Work Study	1	2
90.322	Human Relations	2	1
90.341	Cost and Managerial Accounting	2	3
90.346	Auditing	2	1
90.347	Financial Accounting	2	3
90.360	Business Law	2	1
90.361	Finance	3	2
90.396	Data Processing Applications	2	3
	Tutorials	...	3
		16	19

Term 4

90.424	Personnel Administration	2	1
90.434	Managerial Policy	1	2
90.441	Cost and Managerial Accounting	2	3
90.446	Auditing	2	3
90.447	Financial Accounting	2	3
90.460	Business Law	2	1
90.461	Finance	3	2
	Tutorials	...	6
		14	21

NOTE.—By special arrangement, students in Terms 3 and 4 can elect to take Computer Programming (90.350 and 90.450) in place of Finance (90.361 and 90.461), Human Relations (90.322), and Personnel Administration (90.424).

General Prerequisite: Graduation on the University Entrance Programme.

‡ *Special Prerequisite:* Mathematics 91.

Subjects Desirable but Not Essential: English 91, Commerce 91, Typing 30

‡ NOTE.—*See* page 60 for prerequisites effective September, 1967.

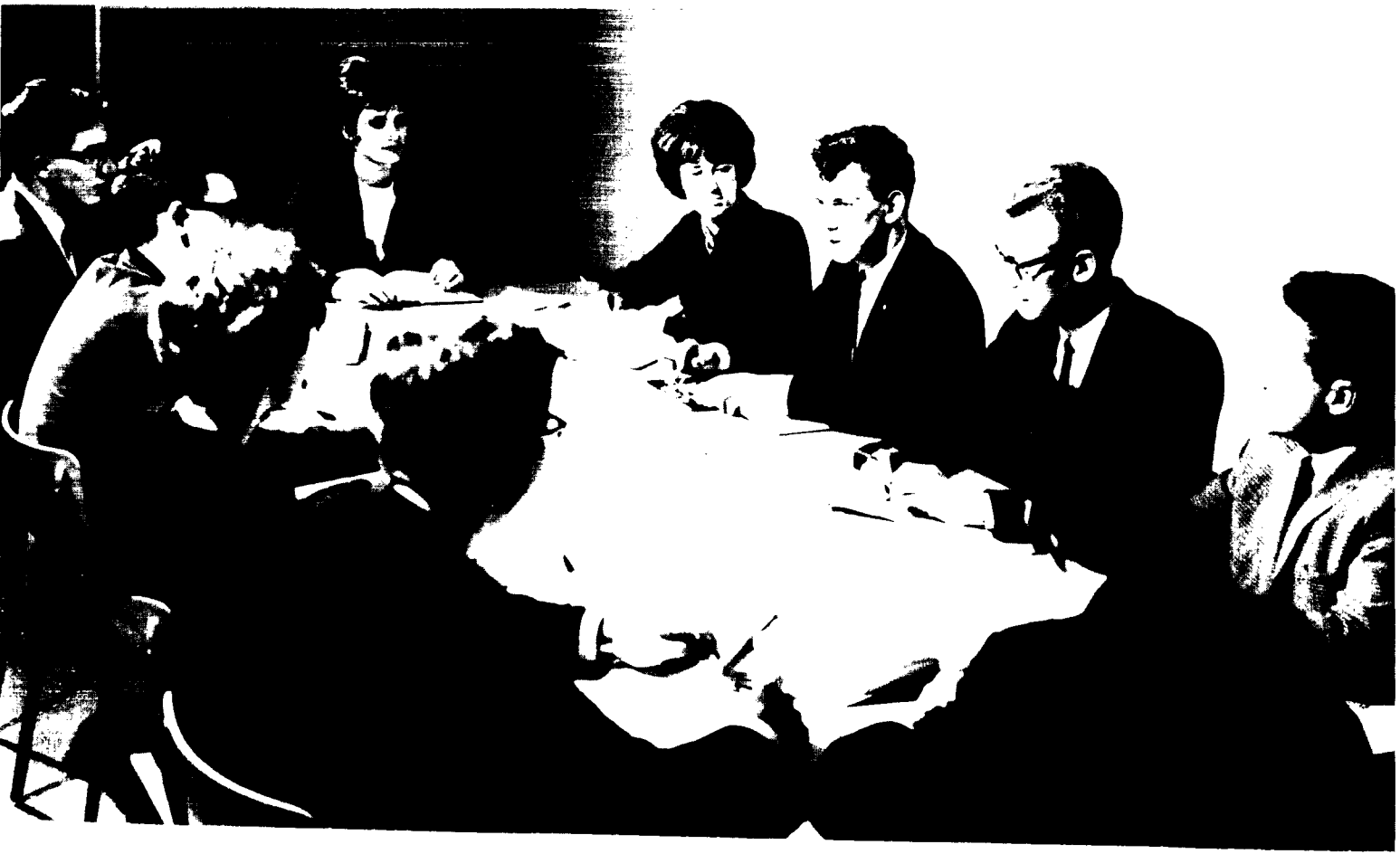
Administrative Management Option

Training in the administrative aspects of management has increased in importance as business has become more complex, more competitive, and more exacting. A scientific and logical approach to problem-solving and decision-making has now become essential to successful business accomplishment.

To assist in this objective, the Administrative Management Option is offered to give the student a broad yet thorough understanding of modern business practices, and to fit him for efficient administrative performance. To provide a sufficiently wide coverage, course material includes, in addition to the basic subjects given in the earlier terms: Administrative Practices, Business Law, Finance, Data Processing Applications, Communication Systems, Human Relations, Personnel Administration, Estate Management, Management Accounting, and Managerial Policy. Lectures given by the faculty and guest lecturers covering the fundamentals of the various subjects are followed by laboratory work designed to simulate actual business problem situations. These take the form of business case discussions, problem sessions, seminars, and field trips, and give the student full opportunity to take an active part in analysing problems, drawing conclusions from the data provided, making proposals and suggesting solutions much as would be the case in the actual situation. In this way the student gains confidence in his ability to participate in handling the varied problems of business, and develops a competence and adaptability in those administrative techniques so necessary for the successful manager.

This general business training provides the necessary background for young men and women who wish to enter positions in a wide range of businesses, industry, or government. Attractive administrative opportunities are available in a choice of fields including public utilities; governmental agencies; transportation; real estate; manufacturing industries; financial institutions such as banks, trusts, insurance companies, and finance companies; and a range of big and small businesses of all kinds. Administrative position in these fields would include functions such as planning, research, finance, business organization, personnel administration, and project execution. After appropriate job experience, opportunities would be at the intermediate level, such as office manager, department or branch manager.

Students undertaking this programme should find opportunities for a very satisfying career. Many key aspects of business are exposed to the administrator, and competent individuals with initiative who have an inquiring mind, diversified interests, a desire to see things done efficiently, and who enjoy working with people could find themselves launched on a career leading to important and rewarding executive positions.



BUSINESS MANAGEMENT

ADMINISTRATIVE MANAGEMENT OPTION

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.102	Business Writing and Contemporary Thought	2	1
90.103	Business Mathematics	3	3
90.131	Management in Industry	1	1
90.135	Economics	2	2
90.140	Accounting	2	3
90.150	Introduction to Data Processing	1	3
90.170	Marketing	2	1
90.182	Office Systems and Equipment	1	2
	Tutorials	....	6
		14	21

Term 2

31.202	Business Writing and Contemporary Thought	2	1
90.204	Business Statistics	2	3
90.232	Administrative Practices	1	2
90.235	Economics	2	2
90.240	Accounting	2	3
90.245	Credit and Collections	2	1
90.270	Marketing	2	1
90.296	Systems and Procedures	1	2
	Tutorials	....	6
		14	21

YEAR 2 — *Term 3*

90.190	Work Study	1	2
90.322	Human Relations	2	1
90.332	Estate Management	2	1
90.333	Industrial Processes	1	2
90.360	Business Law	2	1
90.361	Finance	3	2
90.381	Communication Systems	1	2
90.396	Data Processing Applications	2	3
	Tutorials/Electives	....	7
		14	21

Term 4

90.424	Personnel Administration	2	1
90.432	Estate Management	2	1
90.434	Managerial Policy	1	2
90.443	Management Accounting	2	3
90.460	Business Law	2	1
90.461	Finance	3	2
90.491	Work Study	1	3
	Tutorials/Electives	....	9
		13	22

General Prerequisite: Graduation on the University Entrance Programme.
‡ *Special Prerequisites:* Mathematics 91.
Subjects Desirable but Not Essential: English 91, Commerce 91, Typing 30.

Electives may be chosen, subject to faculty approval, from any second-year subject in the Business Management Programme.

‡ NOTE.—*See* page 60 for prerequisites effective September, 1967.


IBM

Computer Programming and Systems Option

The development, in the last few years, of the electronic computer has resulted in what has been called a "second industrial revolution." Almost every field of human endeavour has been affected by this development, and computers are now used in such diversified areas as banking, libraries, business accounting, air-line ticket reservations, space flight, controlling railroads, predicting weather, calculating statistics for insurance companies, scientific research, and the automatic control of factories, refineries, and power plants.

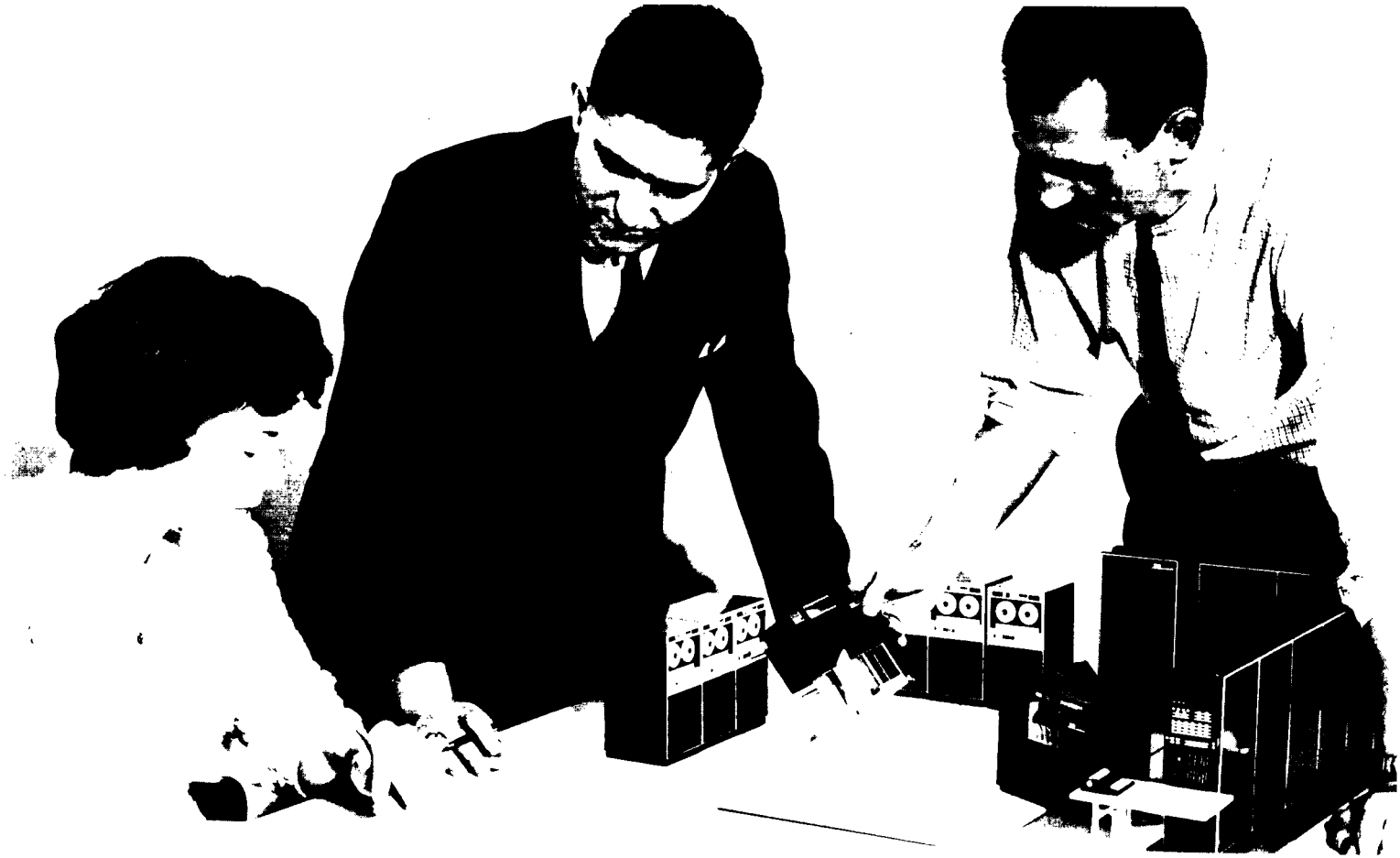
These applications of the electronic computer cannot be successfully established without an enormous amount of human planning and preparation. The computer is an extremely fast and reliable calculating device, but it must be given completely detailed instructions for every step in the calculation. This involves three main steps in the application of a computer to a problem. First, a complete analysis must be made of the problem, taking into account every conceivable situation that can arise. Secondly, an approach to the solution must be formulated showing the action to be taken in each different circumstance. Finally, the solution must be expressed in the form of a set of instructions to the computer.

These three steps comprise the work of the systems analyst and computer programmer, and the growth in the use of electronic computers has been so rapid and so extensive that there is a severe shortage of such personnel throughout the entire world. It has been estimated, for instance, that the number of people involved with electronic computers in the United States will rise from one million to three million between 1964 and 1970, while the anticipated increase in computer personnel in British Columbia is from 400 in 1965 to 1,100 in 1970.

The Computer Programming and Systems Option is designed to train students to meet this demand for programmers and systems analysts. In British Columbia the demand is mainly in business rather than scientific applications, and the course accordingly emphasizes this area. Training is given in basic business subjects such as accounting, economics, and office equipment, as well as in the more technical areas of computer programming, communication systems, mathematical analysis, and statistics. An introduction to scientific techniques is also included.

Students wishing to enter this programme should have a strong mathematical and analytical inclination and an aptitude for logical reasoning, as exemplified in the physical sciences. They must also have a capacity for painstaking attention to detail.

A graduate of this programme, with these qualities, is assured of employment in one of the most exciting and rapidly growing areas of modern technology.



BUSINESS MANAGEMENT

COMPUTER PROGRAMMING AND SYSTEMS OPTION

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.102	Business Writing and Contemporary Thought	2	1
90.103	Business Mathematics	3	3
90.131	Management in Industry	1	1
90.135	Economics	2	2
90.140	Accounting	2	3
90.150	Introduction to Data Processing	1	3
90.170	Marketing	2	1
90.182	Office Systems and Equipment	1	2
	Tutorials	....	5
		14	21

Term 2

31.202	Business Writing and Contemporary Thought	2	1
90.204	Business Statistics	2	3
90.235	Economics	2	2
90.240	Accounting	2	3
90.250	Computer Programming	2	4
90.252	Unit Record Equipment	1	2
90.270	Marketing	2	1
90.296	Systems and Procedures	1	2
	Tutorials	....	3
		14	21

YEAR 2 — *Term 3*

90.190	Work Study	1	2
90.303	Mathematical Analysis	1	2
90.322	Human Relations	2	1
90.341	Cost and Managerial Accounting	2	3
90.350	Computer Programming	2	6
90.381	Communication Systems	1	2
90.396	Data Processing Applications	2	3
	Tutorials	....	5
		11	24

Term 4

90.403	Mathematical Analysis	1	2
90.404	Applied Statistics	1	2
90.434	Managerial Policy	1	2
90.441	Cost and Managerial Accounting	2	3
90.450	Computer Programming	2	6
90.491	Work Study	1	3
90.496	Computer Systems	2	4
	Tutorials	....	3
		10	25

General Prerequisite: Graduation on the University Entrance Programme.
‡ *Special Prerequisite:* Mathematics 91.
Subjects Desirable but Not Essential: English 91, Commerce 91, Typing 30.

‡ NOTE.—*See* page 60 for prerequisites effective September, 1967.


PYJAMAS

Marketing Option

The stature of marketing within the total structure of society continues to grow. Each year brings additional evidence that our standard of living depends on the combination of increased productivity, technological progress, and the manner and effectiveness with which marketing functions are performed. It is through the marketing function that these advances are maintained and their benefits distributed.

The tremendous growth of our productive mechanisms demands dynamic marketing practices, the intense cultivation of markets, and intelligent, imaginative, and trained marketing people to carry out the vast and varied marketing functions. As a result, an ever-increasing number of graduates well equipped with an understanding of the objectives, methods, structure, and problems of marketing are needed in industry.

A large part of any marketing course, because of the nature and scope of the field, must be factual and descriptive. But more important than the mere presentation of facts is their appraisal and their application in the real problems of the business setting. To develop these skills, the Institute makes extensive use of the most modern methods of instruction, provides for guests from industry to lecture in their respective fields of specialization, and requires active participation of the student in business settings through field trips, group projects, seminars, and case studies.

The career opportunities provided by marketing activities are abundant for both male and female graduates, and are found in the wide variety and magnitude of those activities in the marketing function. In the broad fields of retailing, wholesaling, sales and sales management, advertising and promotion, and marketing research, there are opportunities for persons with numerous skills, various aptitudes, and particular interests. Few other fields of endeavour present a greater challenge to the interested and qualified individual or provide more ample and prompt rewards for accomplishment.

BUSINESS MANAGEMENT

MARKETING OPTION

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.102	Business Writing and Contemporary Thought	2	1
90.103	Business Mathematics	3	3
90.131	Management in Industry	1	1
90.135	Economics	2	2
90.140	Accounting	2	3
90.150	Introduction to Data Processing	1	3
90.170	Marketing	2	1
90.182	Office Systems and Equipment	1	2
	Tutorials	....	5
		14	21

Term 2

31.202	Business Writing and Contemporary Thought	2	1
90.204	Business Statistics	2	3
90.235	Economics	2	2
90.240	Accounting	2	3
90.270	Marketing	2	1
90.296	Systems and Procedures	1	2
90.245	Credit and Collections	2	1
90.275	Salesmanship	1	2
	Tutorials	....	6
		14	21

YEAR 2 — *Term 3*

90.322	Human Relations	2	1
90.333	Industrial Processes	1	2
90.342	Retail Merchandise Accounting	2	3
90.360	Business Law	2	1
90.371	Marketing Institutions	2	2
90.372	Merchandising	2	3
90.373	Advertising and Sales Promotion	2	3
90.376	Sales Management	2	1
	Tutorials	....	4
		15	20

Term 4

90.424	Personnel Administration	2	1
90.443	Management Accounting	2	3
90.460	Business Law	2	1
90.471	Marketing Institutions	2	2
90.472	Merchandising	2	3
90.473	Advertising and Sales Promotion	2	3
90.474	Marketing Research	2	2
90.434	Managerial Policy	1	2
	Tutorials	....	3
		15	20

General Prerequisite: Graduation on the University Entrance Programme.

‡ *Special Prerequisite:* Mathematics 91.

Subjects Desirable but Not Essential: English 91, Commerce 91, Typing 30.

‡ NOTE.—*See* page 60 for prerequisites effective September, 1967.

Technical Management Option

Modern industry has created a demand for a new kind of technologist. He is the man who combines a mathematical and scientific interest in solving industrial problems. He needs a sound knowledge of both business operations and engineering fundamentals and procedures. The training he receives will lead him to a career in problem-solving as a methods analyst in plant or office, or possibly into a position as technician in an industrial engineering office.

Graduates of this programme whose interests centre on the communication of ideas, rather than the creation of solutions, will find this training to be a solid foundation for a career in technical sales or purchasing. Others, whose interests relate to the control of business, may proceed into careers in cost analysis or estimating.

The job opportunities in these areas are expanding rapidly because modern business is becoming more and more technical. With more money being spent in research than ever before, products are being developed which require businessmen to extend their technical knowledge in order to produce, market, purchase, and use them. This development, coupled with increased competition, requires that more and more attention be given to operating cost and methods. In many cases, products are produced which must be profitable from their introduction to the market because they become technically obsolete within a few years.

The person who wishes to work and progress in this environment requires specific attributes. He must have good ability and interest in the applications of mathematics, coupled with the potential to communicate effectively in English. He must be mature and able to share ideas with a wide range of people. A sense of curiosity toward mechanical and electrical devices is beneficial especially if associated with the talent to put this to use. In general, he must have the ability to acquire a higher education and have a desire to use the tools of the technologist in a modern business environment.

To provide students with the basic tools, this programme provides subjects in both business and the basic engineering technologies. These subjects will provide training to enable the student to operate at a practitioner level and will consequently stress applications. Some subjects will, of course, emphasize theoretical knowledge (e.g., mathematics), which will be necessary in order to understand some of the more advanced topics.

Trips will be arranged to demonstrate the application of various techniques in industry. This will be complemented by guest lecturers who have special knowledge in particular areas. These approaches ensure that the programme remains oriented toward industrial practice. Students graduating from this programme will have a sound base from which to progress toward a management career.

BUSINESS MANAGEMENT

TECHNICAL MANAGEMENT OPTION

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.102	English	2	1
32.101	Mathematics	2	3
33.102	Introductory Physics	3	3
49.101	Draughting		3
49.105	Mechanics	2	3*
90.110	Problems Laboratory	1	3*
90.140	Accounting	2	3
90.150	Introduction to Data Processing	1	3
	Tutorials		3
		13	22

Term 2

31.202	English	2	1
32.401	Mathematics	2	3
33.202	Introductory Physics	3	3
49.206	Engineering Concepts	2	2
90.210	Applied Programming	1	3
49.267	Shopwork	1	3
90.240	Accounting	2	3
	Tutorials		4
		13	22

YEAR 2 — *Term 3*

32.301	Mathematics	2	3
90.135	Economics	2	2
90.190	Work Study	1	2
90.310	Business Engineering Problems	2	3
90.312	Industrial Organization and Operations	3	3
90.322	Human Relations	2	1
90.341	Cost Accounting	2	3
	Tutorials		4
		14	21

Term 4

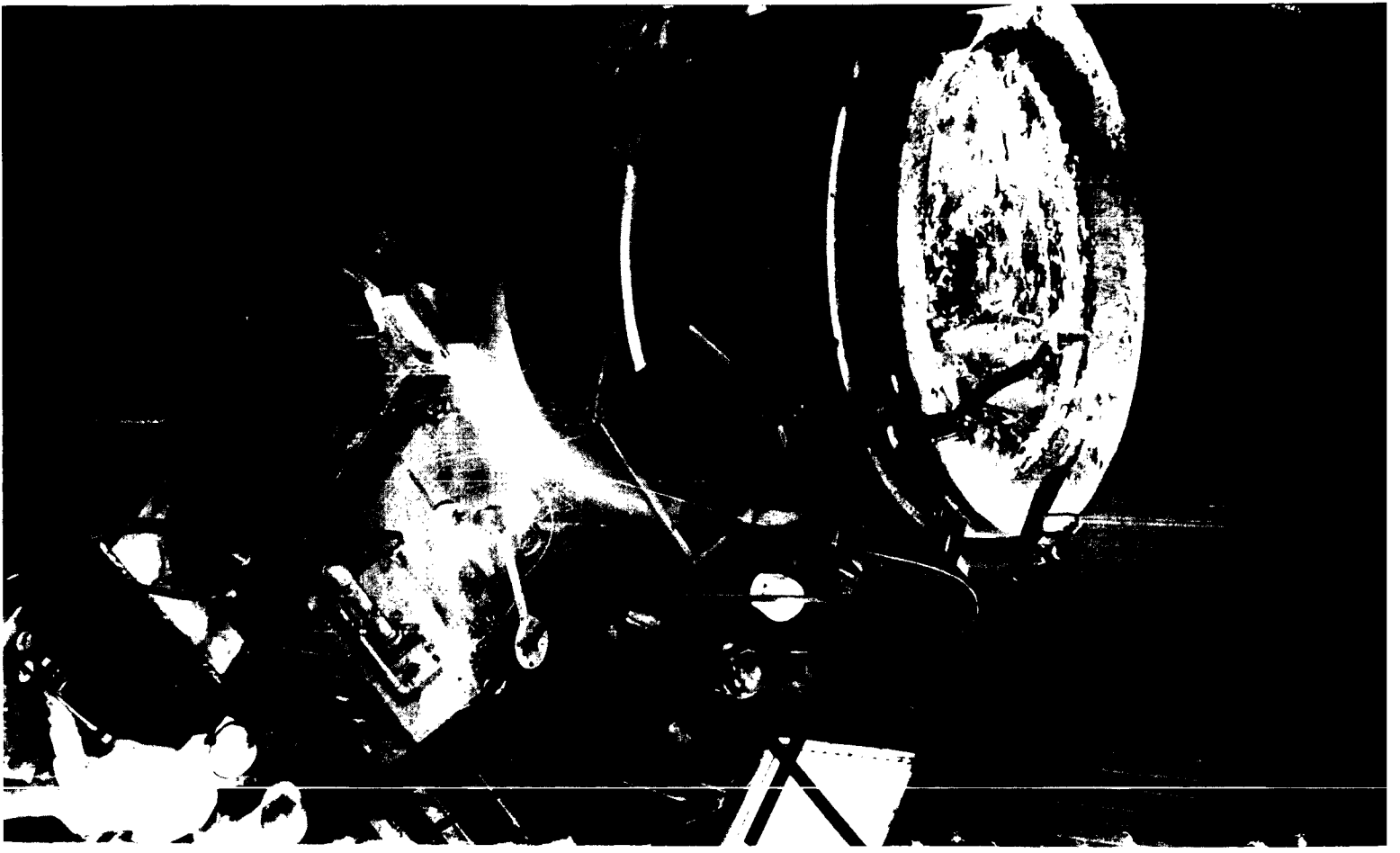
32.415	Numerical Analysis	2	3
90.235	Economics	2	2
90.410	Business Engineering Problems	2	3
90.412	Industrial Organization and Operations	2	1
90.415	Electrical and Mechanical Power Devices	1	2
90.416	Measurement and Control Devices	2	2
90.424	Personnel Administration	2	1
90.491	Work Study	1	3
	Tutorials		4
		14	21

* Three hours alternating each week.

General Prerequisite: Graduation on the University Entrance Programme.

‡ *Special Prerequisite:* Mathematics 91.

‡ NOTE.—*See* page 60 for prerequisites effective September, 1967.



Chemical and Metallurgical Technology

The programme in Chemical and Metallurgical Technology provides instruction to those men and women wishing to enter the process industries, either as operating or laboratory personnel. As the technology encompasses a broad range of industries and sciences, the training emphasizes mathematics, physics, and chemistry and their application to general problems recurring in most raw-materials processing operations, rather than to specific problems peculiar to a single industry. Consequently, the first year is quite general, only the tutorials and a workshop course being at all unique to this programme.

In the second year the curriculum provides considerable analytical laboratory practice together with such production training as work study, unit operations, and instrumentation. In addition, the student is given the option of taking one subject in physical metallurgy or an advanced course in organic chemistry. In this way a graduate will be equipped to enter the industry of his choice in either the production or laboratory department, or even to move from one to the other.

Typical of the industries that will engage graduates from the programme are oil refiners, chlorine and caustic soda producers, beet and cane sugar refiners, cement producers, lime and gypsum producers, plastics and resin producers; iron, copper, lead, nickel, and other metal smelters; aluminum, magnesium, bronze, and iron and steel founders; metal fabricators and heat treaters; pulp and paper mills and cellulose chemical producers; and mining companies engaged in both exploration and production. Typical of the positions graduates would seek upon entering industry would be junior chemist or analyst in a commercial, food, or smelter laboratory; control sampler in a sugar-mill, caustic soda plant, pulp-mill, or mineral-concentrating plant; metallurgist's assistant in a steel-mill, a heat-treating shop, an electroplating plant, or an oil refinery; and supervisory trainee in practically any processing operation.

Salaries will vary according to the industry, company, and job. However, the salary will usually begin at about the level of a journeyman in the same field and then will rise to overlap that of the engineer or scientist working alongside the technician. In the large, highly organized companies there is often a ceiling on the technician's salary, but in the smaller companies his advance is limited only by his initiative and ability.


BCIT

CHEMICAL AND METALLURGICAL TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.101	Writing and Contemporary Thought	2	1
32.101	Mathematics	3	2
33.101	Physics	3	3
41.103	Engineering Materials	2	3*
30.101	General Chemistry	3	3
49.101	Draughting		3
41.102	Laboratory Workshop		3*
90.230	Business	2	1
	Tutorials		4
		15	20

Term 2

31.201	Writing and Contemporary Thought	2	1
32.201	Mathematics	3	2
33.201	Physics	3	3
30.201	General Chemistry	3	3
41.203	Engineering Materials	2	3*
49.201	Draughting		3
41.202	Laboratory Workshop		3*
	Tutorials		7
		13	22

YEAR 2 — *Term 3*

31.301	Writing and Contemporary Thought	1	1
32.301	Mathematics	3	2
30.301	Organic Chemistry (Chemistry Option)	2	4
30.302	Physical Chemistry	2	3
41.303	Analytical Chemistry	2	4
41.304	Physical Metallurgy (Metallurgy Option)	3	3
48.301	Instrumentation		3
47.341	Unit Operations	3	3
	Tutorials		2
		13/14	22/21

Term 4

31.401	Writing and Contemporary Thought	1	1
32.401	Mathematics	3	2
30.401	Organic Chemistry (Chemistry Option)	2	4
41.403	Analytical Chemistry	2	4
41.404	Physical Metallurgy (Metallurgy Option)	3	3
48.401	Instrumentation		3
47.441	Unit Operations	3	3
90.190	Work Study	2	
	Tutorials		5
		13/14	22/21

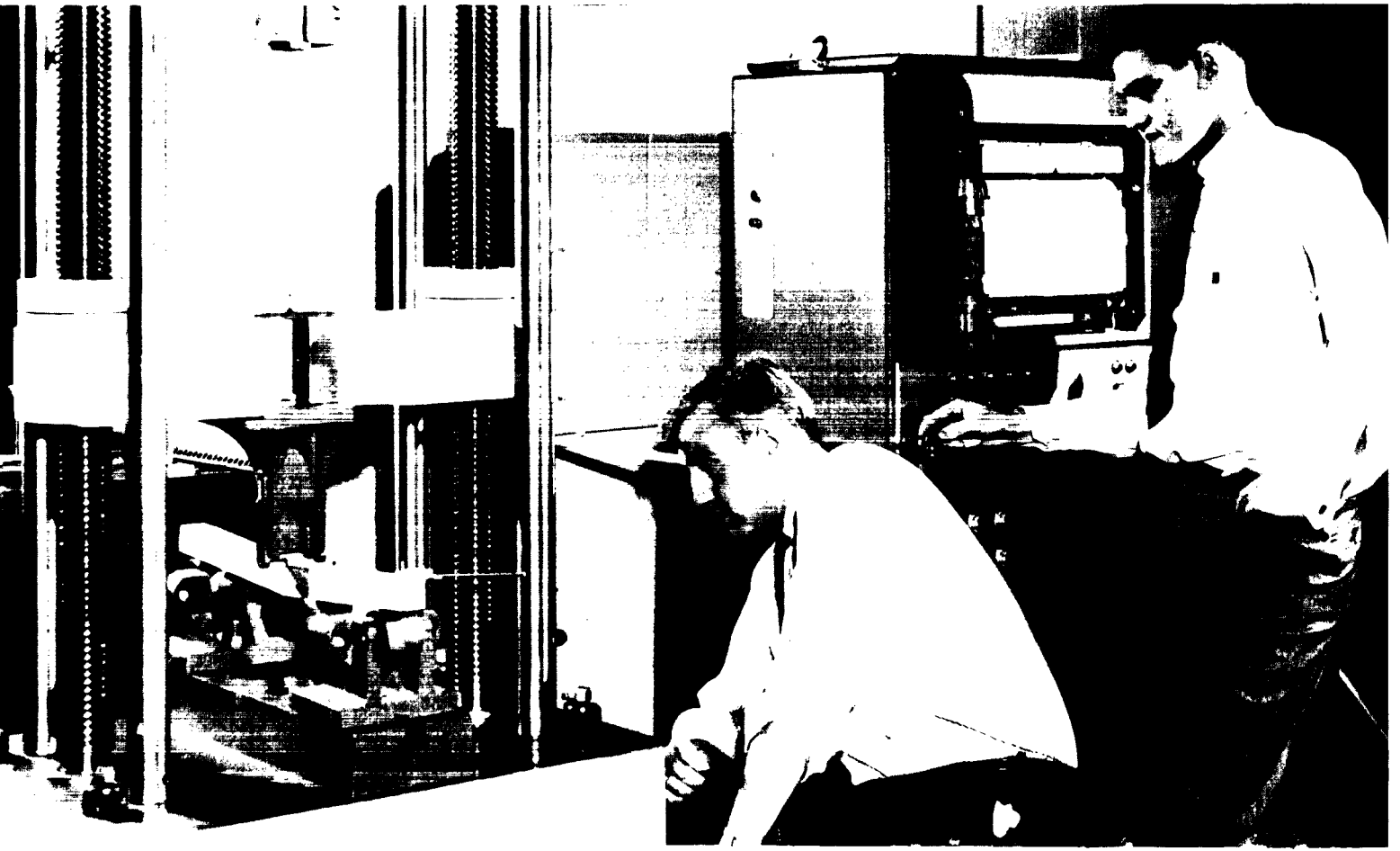
* Alternate weeks.

General Prerequisite: Graduation on the University Entrance Programme.

‡ *Special Prerequisites:* Mathematics 91, Chemistry 91.

Subjects Desirable but Not Essential (*see* General Requirements under Enrolment): Physics; Industrial Arts, 90 Series.

‡ NOTE.—*See* page 60 for prerequisites effective September, 1967.



Civil and Structural Technology

Civil and Structural Technology, which creates the physical facilities for the civilized environment, is concerned with the design and construction of bridges, highways, railways, airports, dams, power developments, canals, docks, harbours, and buildings of all kinds, as well as drainage, irrigation, sewage, and water-supply systems.

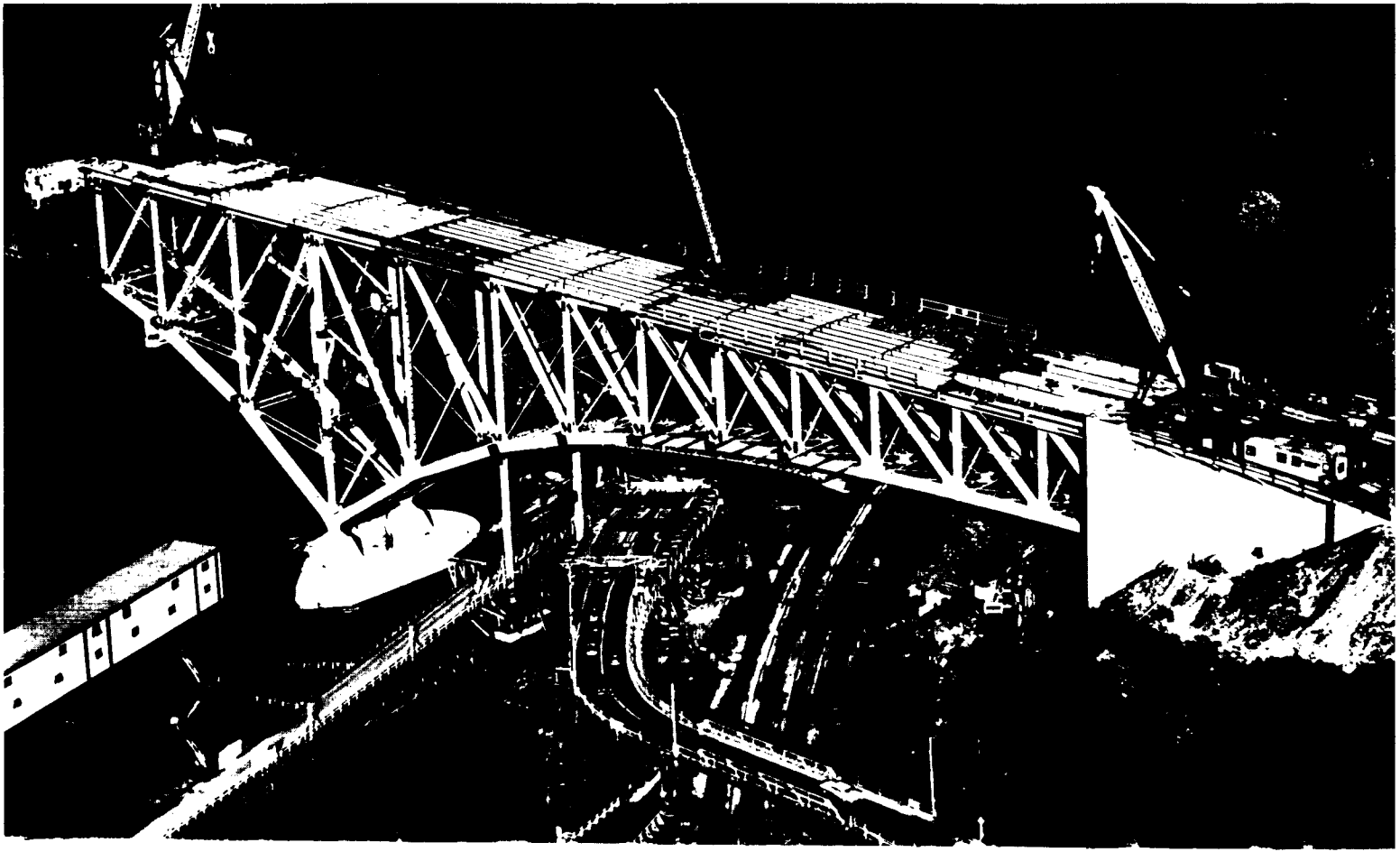
In Canada, and particularly in British Columbia, with the economy developing rapidly, a great demand exists for trained technicians. Specifically designed to train civil and structural technicians, this programme will provide a man with sufficient specialized knowledge to make him immediately capable of playing a useful role in the economy. In addition, the programme prepares him to adapt to demands of the future.

The programme provides a foundation in mathematics and the applied sciences for continued technical growth, and in English for the ability to set forth, in clear and precise language, descriptions and analyses of projects and engineering activities. The methods of instruction are planned to develop the initiative of the student while training him in habits of accurate analysis and careful work. In addition, frequent field trips will be made to appropriate projects to demonstrate at first hand the technology in operation. A student is encouraged to secure summer work which will give him an insight into various aspects of the career upon which he is about to enter.

A graduate may be employed as an inspector or supervisor in the contracting field, as an investigating or laboratory technician, or as a design or field technician in a consultant's office. He may be employed by municipal, provincial, or federal agencies, by consulting engineers, architects, and contractors, or in technical sales.

Candidates must have a sound knowledge of mathematics, physics, and English, and preferably some training in draughting. An interest in the practical application of scientific principles is essential.

This field frequently involves both indoor and outdoor assignments and requires keenness to take up the challenge offered by a fast-expanding industry demanding initiative and responsibility from its employees.



CIVIL AND STRUCTURAL TECHNOLOGY

No.	Subject	Hours per Week Lec.	Lab.
	YEAR 1 *Term 1*		
31.101	Writing and Contemporary Thought	2	1
32.101	Mathematics	3	2
33.101	Physics	3	3
49.101	Draughting	—	3
51.102	Surveying	—	3
42.101	Civil Engineering	1	3
42.102	Hydraulics	2	2*
42.103	Statics	2	2
42.104	Concrete Technology	1	2
	Tutorials	—	2*
		14	21
	Term 2		
31.201	Writing and Contemporary Thought	2	1
32.201	Mathematics	3	2
33.201	Physics	3	3
49.201	Draughting	—	3
51.202	Surveying	—	3
42.201	Civil Engineering	1	2
42.202	Hydraulics	2	2*
42.204	Design	2	2
42.205	Strength of Materials	—	3
	Tutorials	1	2*
		14	21
	YEAR 2 *Term 3*		
31.301	Writing and Contemporary Thought	1	1
32.301	Mathematics	3	2
51.304	Surveying for Civil and Structural	—	3
90.230	Business	2	1
42.307	Soil Mechanics and Foundations	2	—
90.190	Work Study	1	2
42.308	Highway Engineering	2	2
42.301	Civil Engineering	2	2
42.306	Structural Design and Draughting	1	5
	Tutorials	1	2
		15	20

* Alternate weeks.

Term 4

No.	Subject	Civil Option Hours per Week Lec.	Lab.	Structural Option Hours per Week Lec.	Lab.
31.401	Writing and Contemp. Thought	1	1	1	1
32.401	Mathematics	3	2	3	2
51.404	Surveying for Civil and Structural	—	3	—	3
90.351	Computer Programming	1	1	1	1
	Tutorials	1	4	1	3
42.409	Public Services Engineering	1	4	1	2
42.410	Codes and Specifications	1	—	1	—
42.411	Costing and Estimating	1	2	1	2
42.407	Soil Mechanics and Foundations	2	3	1	2
90.491	Work Study	1	3	—	—
42.406	Structural Design and Draughting	—	—	1	6
42.412	Bridge and Building Practice	—	—	1	1
		13	22	12	23

General Prerequisite: Graduation on the University Entrance Programme.

‡ *Special Prerequisites:* Mathematics 91, Physics 91.

Subjects Desirable but Not Essential (*see* General Requirements under Enrolment): Chemistry; Industrial Arts, 90 Series.

‡ NOTE.—*See* page 60 for prerequisites effective September, 1967.

Electrical and Electronics Technology

The electrical and electronics industry, vital to every aspect of Canadian life, continues to grow rapidly. It provides power needed by industry (the use of electrical energy in Canada doubles every 10 years), supplies facilities for the ever-increasing requirements of communications, serves the needs of automation, transportation, defence, and our personal comforts. New products and methods are continually being developed to meet new demands. Consequently, there is a continuing and increasing need for men and women well trained in the principles and practical application of electricity and electronics to apply their talents and assume positions of importance in an ever-expanding and interesting field. The objective of the two-year Electrical and Electronics Technology programme is to provide sufficient training for the graduate to enter industry at the semi-professional level as an engineering assistant or its equivalent. A broad training is given in fundamentals and industrial practices qualifying the graduate to enter a variety of fields in an industry which provides many opportunities.

Two fields of instruction are offered — electric power and electronics. The programme in the first year is identical in both fields, with special emphasis on mathematics, physics, and electrical and electronic circuits. These courses form the foundation upon which can be built the skills of the technician. The second year courses include further foundation material, and also cover specific topics related to the particular option of the technology. For example, pulse circuits are studied by those students in the Electronics Option, and power systems by those in the Power Option. Laboratories are well equipped to demonstrate clearly the principles taught, and to permit further investigations by the student. Graduates from the Electrical and Electronics Technology programme will find employment in production, design, installation, testing, technical sales, marketing, estimating, and in many other activities with manufacurers, communication companies, power companies, contractors, government agencies, and others.

ELECTRICAL AND ELECTRONICS TECHNOLOGY

YEAR 1

Term 1

No.	Subject	Hours per Week Lec.	Lab.
31.101	Writing and Contemporary Thought	2	1
32.102	Mathematics	5	4
33.101	Physics	3	3
43.102	Electrical Circuits	5	5
49.166	Shop	—	2
49.101	Draughting	—	3
	Tutorials	—	2
		15	20

Term 2

31.201	Writing and Contemporary Thought	2	1
32.202	Mathematics	5	4
33.201	Physics	3	3
43.202	Electrical Circuits	3	2
43.223	Electronics Circuits	2	2
49.201	Draughting	—	3
30.202	Chemistry	2	2
	Tutorials	—	1
		17	18

YEAR 2

Term 3

No.	Subject	POWER OPTION Hours per Week Lec.	Lab.	ELECTRONICS OPTION Hours per Week Lec.	Lab.
31.301	Writing and Contemporary Thought	1	1	1	1
32.302	Mathematics	3	2	3	2
43.303	Measurements	1	3	1	3
33.301	Physics	2	—	—	—
33.302	Physics	—	—	2	—
	Tutorials	—	4	—	1
90.351	Computer Programming	2	—	2	—
43.323	Electronic Circuits	—	—	3	5
43.324	Communications	—	—	3	3
43.321	Electrical Equipment	—	—	2	3
43.311	Electrical Equipment	4	6	—	—
43.313	Circuit Analysis	3	3	—	—
		16	19	17	18

Term 4

90.230	Business	1	1	1	1
43.404	Servo Systems	2	2	2	2
43.425	Pulse Circuits	—	—	2	2
43.427	Microwave Techniques	—	—	2	2
43.428	Digital Techniques	—	—	2	2
43.422	Industrial Electronics	—	—	2	2
43.441	Electronic Systems	—	—	4	4
43.429	Special Projects and Tutorials	—	—	—	5
43.419	Special Topics and Assignments	2	8	—	—
43.414	Power Systems	4	4	—	—
43.412	Industrial Electronics	3	3	—	—
43.411	Electrical Equipment	2	3	—	—
		14	21	15	20

General Prerequisite: Graduation on the University Entrance Programme.

‡ *Special Prerequisites:* Mathematics 91, Physics 91.

Subjects Desirable but Not Essential (*see* General Requirements under Enrolment): Chemistry; Industrial Arts, 90 Series.

‡ NOTE.—*See* page 60 for prerequisites effective September, 1967.

Food Technology

Commercial food production and processing are undergoing a technological revolution. The application of scientific methods is rapidly changing both the production of raw food materials and the processing of finished food products. As a result, skilled personnel, including technicians, are required to oversee and control the complex operations of our modern food industry. The Food Technology programme is designed to provide these trained technicians.

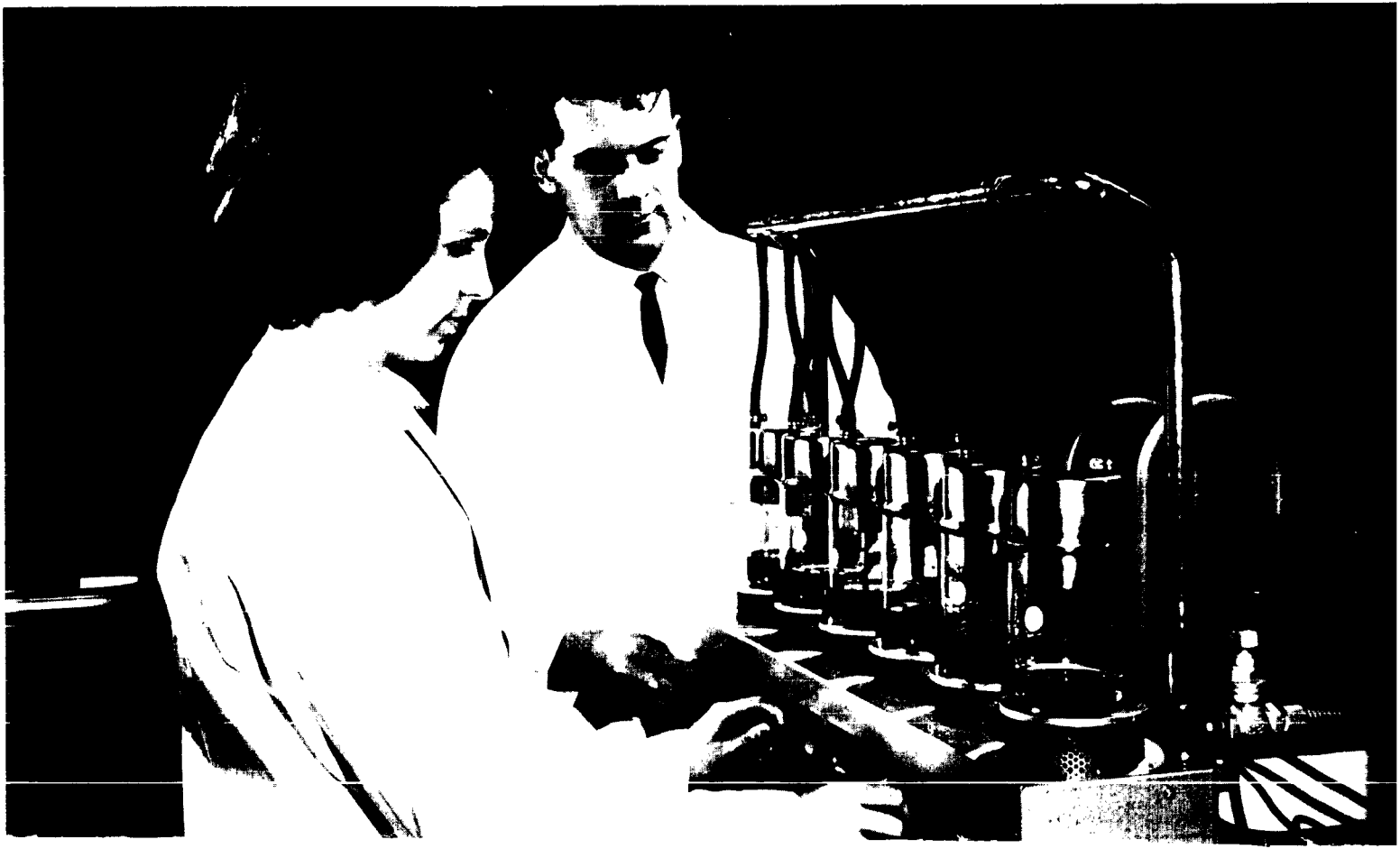
The food industry is Canada's most stable business, little affected by fluctuations in the economic climate. It is a vast industry, with a major proportion of the work force engaged in the production, processing, and distributing of food. Since this is an ever-expanding industry, there are almost limitless opportunities for rewarding careers in it.

Food Processing Option

The Food Processing Option is planned, first, to provide a sound knowledge of the basic sciences and, second, to proceed to more advanced technical courses in quality-control methods, food analysis, food preservation, sanitation, instrumentation, processing machinery, and business management.

The Institute has a well-equipped experimental processing laboratory that enables the student to become familiar with a wide variety of food processing methods and testing procedures. Organized trips to industrial food plants will allow him to study the operations performed in commercial canning, freezing, dairying, brewing, meat and fish packing, milling and baking, confectionery, and specialty-products industries Visits to government laboratories will provide an opportunity to observe food inspection and research facilities.

The graduate will be well qualified to seek employment in the many branches of the food industry and allied government agencies. For example, technicians are required in quality-control laboratories where chemical, physical, and bacteriological tests are performed on food materials before and during processing, and on the finished packaged products. The graduate will also be qualified to operate special equipment and to supervise processes within the food plant itself. Further employment opportunities exist in government aboratories and inspection services. Opportunities for advancement are good.



FOOD TECHNOLOGY

FOOD PROCESSING OPTION

No.	Subject	Hours per Week Lec.	Lab.
	YEAR 1 *Term 1*		
31.101	Writing and Contemporary Thought	2	1
32.101	Mathematics	3	2
30.101	General Chemistry	3	3
33.102	Introductory Physics	3	3
44.101	Food Technology	2	3
44.121	Food Microbiology	2	4
	Tutorials	----	4
		15	20
	Term 2		
31.201	Writing and Contemporary Thought	2	1
32.201	Mathematics	3	2
30.201	General Chemistry	3	3
33.202	Introductory Physics	3	3
90.230	Business	1	1
44.201	Food Technology	2	3
44.221	Food Microbiology	2	3
	Tutorials	----	3
		16	19
	YEAR 2 *Term 3*		
31.301	Writing and Contemporary Thought	1	1
44.312	Food Analysis	2	3
44.301	Food Technology	2	3
30.303	Instrumental Analytical Methods	2	3
48.301	Instrumentation	----	3
44.341	Mechanics of Machines	2	3
44.311	Quality Control	1	3
	Tutorials	----	6
		10	25
	Term 4		
31.401	Writing and Contemporary Thought	1	1
44.412	Food Analysis	2	3
44.401	Food Technology	2	3
48.401	Instrumentation	----	3
44.402	Process Analysis	2	3
44.411	Quality Control	1	3
44.431	Sanitation	2	3
90.190	Work Study	----	2
	Tutorials	----	4
		10	25

General Prerequisite: Graduation on the University Entrance Programme.

‡ *Special Prerequisites:* Mathematics 91, Chemistry 91.

Subjects Desirable but Not Essential (*see* General Requirements under Enrolment): Physics; Biology.

‡ NOTE.—*See* page 60 for prerequisites effective September, 1967.

Forest Products Technology

The forest industry of British Columbia has undergone a marked change since the end of World War II. While a large proportion of the timber of the Province is still manufactured into lumber, the utilization of wood has become increasingly varied. Owing to the application of new principles and techniques to the pulp, paper, newsprint, plywood, and particle-board industries, increasing numbers of technical personnel are required. These industries offer challenging and rewarding employment for conscientious young men of ability and training.

The objectives of the Forest Products Technology programme are to qualify technicians for the various manufacturing operations and to prepare them for responsible positions in British Columbia's largest industry. For example, young men with a good knowledge of technological advances and their application are needed in plant operations, research and development, quality control, and sales.

In addition to basic sciences, subject areas in the first year include botany, dendrology, wood technology, sawmilling, plywood manufacture, and pulp and paper production. This variety will assist the student in selecting one of two options offered during second year. The Wood Option includes the techniques and economics involved in harvesting wood and converting it to usable products such as lumber, laminated beams, plywood, and particle board. Wood seasoning, wood preservation, and fire-retardant treatments will also be introduced, as well as the integration of the forest industries for maximum utilization. The Pulp and Paper Option is concerned with the theory and practice of mechanical, semi-chemical, and chemical pulping, the bleaching of the various pulp types, and the conversion of pulp to useful products such as newsprint, paper, paper products, and textiles.

Laboratory and plant procedures required for product quality control are covered extensively in both options, and field trips to various related industrial operations are used to augment classroom and laboratory instruction. The courses common to both options provide the student with a sufficiently broad background of knowledge to permit him to progress within an advancing technology.

FOREST PRODUCTS TECHNOLOGY

No.	Year 1 — Term 1 — Subject	Hours per Week Lec.	Lab.
31.101	Writing and Contemporary Thought	2	1
32.101	Mathematics	3	2
33.102	Introductory Physics	3	3
30.101	General Chemistry	3	3
49.101	Draughting	—	3
41.103	Engineering Materials	2	3*
45.101	General Forestry	2	3*
45.107	Forest Utilization	2	3*
	Tutorials and Field Trips	—	3*
		17	18
	Term 2		
31.201	Writing and Contemporary Thought	2	1
32.201	Mathematics	3	2
33.202	Introductory Physics	3	3
30.201	General Chemistry	3	3
49.201	Draughting	—	3
41.203	Engineering Materials	2	3*
45.201	General Forestry	2	3*
45.207	Forest Utilization	2	3*
	Tutorials and Field Trips	—	3*
		17	18

* Alternate weeks.

		Pulp and Paper Option Hours per Week		Wood Option Hours per Week	
No.	Year 2 — Term 3 — Subject	Lec.	Lab.	Lec.	Lab.
31.301	Writing & Contemporary Thought	1	1	1	1
32.301	Mathematics	3	2	3	2
30.304	Chemical Laboratory Techniques	—	3	—	3
	Tutorials and Field Trips	—	2	—	3
48.301	Instrumentation	—	3	—	—
47.341	Unit Operations	3	3	—	—
46.301	Pulp and Paper Technology	3	3	—	—
46.304	Pulp and Paper Testing	2	3	—	—
90.190	Work Study	1	2	1	2
43.331	Electrical Equipment	—	—	2	1
46.311	Wood Properties	—	—	2	3
46.314	Wood Processing	—	—	2	4
46.317	Quality Control and Marketing	—	—	2	3
		13	22	13	22
	Term 4				
31.401	Writing & Contemporary Thought	1	1	1	1
32.401	Mathematics	3	2	3	2
	Tutorials and Field Trips	—	3	—	2
90.351	Computer Programming	1	1	1	1
48.401	Instrumentation	1	2	—	—
47.441	Unit Operations	3	3	—	—
46.401	Pulp and Paper Technology	2	3	—	—
46.404	Pulp and Paper Testing	1	3	—	—
46.407	Wood Chemistry	2	3	—	—
49.470	Mechanical Equipment	—	—	2	3
46.411	Wood Properties	—	—	2	3
46.414	Wood Processing	—	—	2	4
46.417	Quality Control and Marketing	—	—	2	3
90.424	Personnel Administration	—	—	2	1
		14	21	15	20

General Prerequisite: Graduation on the University Entrance Programme.
‡ *Special Prerequisites:* Mathematics 91, Chemistry 91.
Subjects Desirable but Not Essential (*see* General Requirements under Enrolment): Physics, Industrial Arts, 90 Series.

‡ NOTE.—*See* page 60 for prerequisites effective September, 1967.

Forestry Technology

The forests of British Columbia constitute the most valuable natural resource, and their utilization provides the greatest single source of income to the Province, supporting approximately one third of our population. A tremendous expansion in the harvesting of timber products is creating demands for new techniques in logging, manufacturing, and reforestation. Thus, there is today a greatly increased demand for technically trained men in this industry.

Since many opportunities are available in forestry, the graduate can expect to qualify for several categories of employment. In logging he will prepare and lay out setting plans and cutting boundaries, mark timber, survey and construct roads; in cruising and stand management he will cruise timber stands for inventory and logging development; in research he will study characteristics of trees and wood for a multiplicity of uses; in forest protection he will plan and direct programmes to minimize losses from fire, insects, and disease; in reforestation he will supervise regeneration surveys, planting or seeding, and nursery operations. In addition, technicians employed by public agencies will be engaged in scaling, protection, research, or inspection of logging or milling operations.

Candidates for this programme should possess initiative and leadership qualities, be able to work efficiently under adverse circumstances, and require a minimum of supervision. The business of forestry is dynamic and constantly faced with new and perplexing problems. Forest technicians must be resourceful, conscientious, and not easily deterred by unfavourable weather and working conditions. Applicants should possess good health, particularly good eyesight, be prepared to adjust to life in a small community or camp, and adapt to spending most of their time out-of-doors. It is important that prospective students consider their own personality and interest. With a genuine interest in the work, not only will they be happier, but they will be much more likely to succeed.

A good background in mathematics, physics, and English is desirable for an applicant in this technology. The Forestry Technology programme will include such subjects as draughting, surveying, forest measurement, interpretation of aerial photographs, logging methods, and wood utilization. Advanced subjects include details of scaling and cruising, entomology, pathology, fire protection, silviculture, and forest management.

FORESTRY TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.101	Writing and Contemporary Thought	2	1
32.101	Mathematics	3	2
49.101	Draughting	—	3
51.102	Surveying	—	3
45.101	General Forestry	2	3*
45.102	Forest Mensuration	2	3
45.110	Fire Control	2	2
45.106	Photo Interpretation	—	3
45.107	Forest Utilization	2	3*
	Tutorials and Field Trips	—	2
		13	22

Term 2

31.201	Writing and Contemporary Thought	2	1
32.201	Mathematics	3	2
49.201	Draughting	—	3
51.202	Surveying	—	3
45.201	General Forestry	2	3*
45.202	Forest Mensuration	2	3
45.210	Fire Control	1	3*
45.205	Logging	2	3
45.207	Forest Utilization	2	3*
	Tutorials and Field Trips	—	3*
		14	21

YEAR 2 — *Term 3*

31.301	Writing and Contemporary Thought	1	1
45.302	Forest Mensuration	1	5
45.305	Logging	1	3
45.308	Roads and Transportation	2	4
45.309	Silviculture	2	3
45.313	Forest Pathology	1	3
45.316	Forest Management	2	1
90.351	Scientific Computer Programming	1	1
	Tutorials and Field Trips	—	3
		11	24

Term 4

31.401	Writing and Contemporary Thought	1	1
45.409	Silviculture	2	3
45.408	Roads and Transportation	1	3
45.414	Forest Entomology	1	3
45.410	Fire Control	1	3
45.402	Forest Mensuration	2	4
45.416	Forest Management	2	—
90.190	Work Study	1	2
90.424	Personnel Administration	2	1
	Tutorials and Field Trips	—	2
		13	22

* Alternate weeks.

General Prerequisite: Graduation on the University Entrance Programme.

‡ *Special Prerequisite:* Mathematics 91.

Subjects Desirable but Not Essential (*see* General Requirements under Enrolment): Biology; Physics; Industrial Arts, 90 Series.

‡ NOTE.—*See* page 60 for prerequisites effective September, 1967.

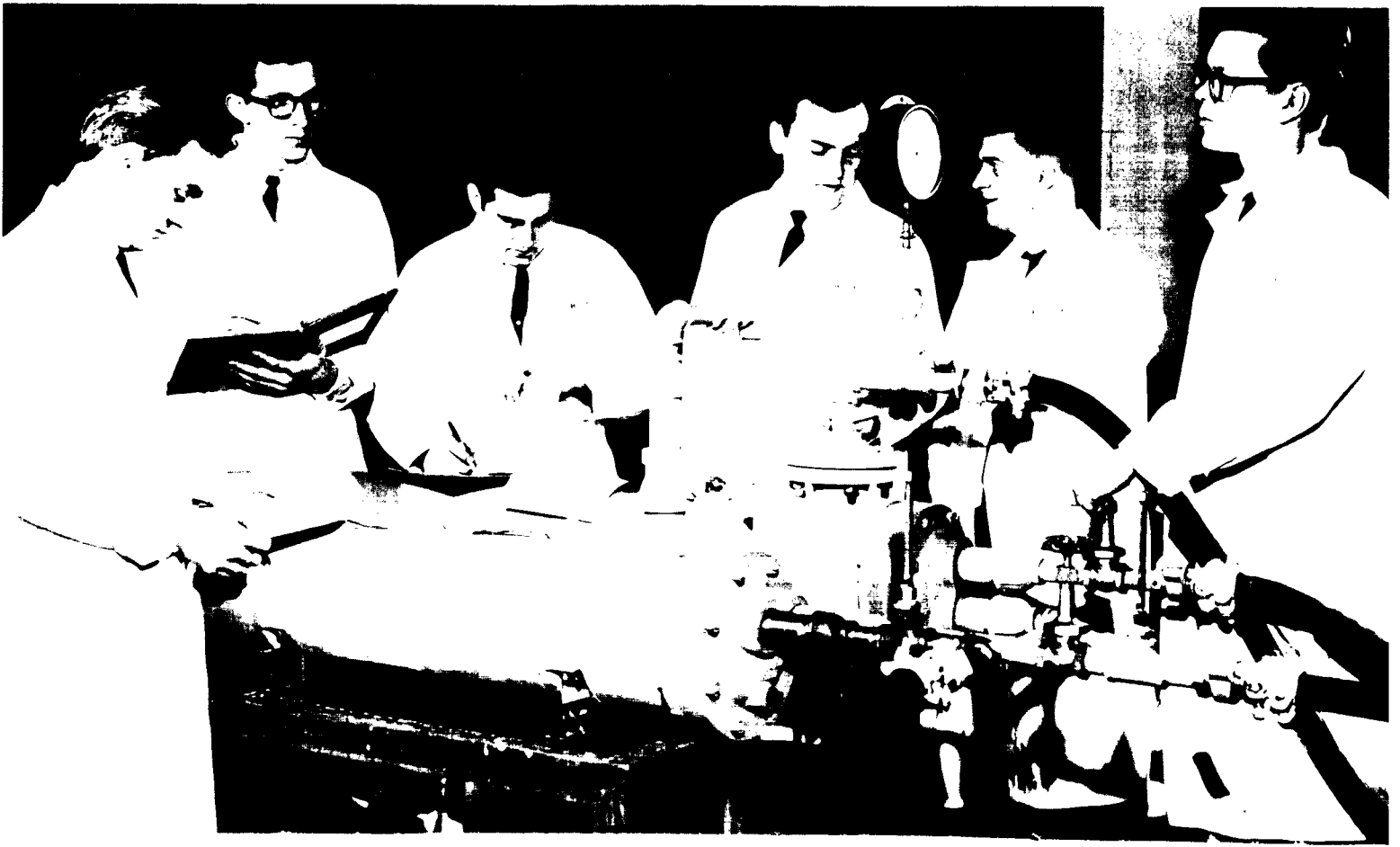
Natural Gas and Petroleum Technology

The gas and oil industry offers a wide variety of employment opportunities for a qualified technician. The transmission branch of the industry, involving the operation of pumping stations and maintenance of pipe-lines over vast areas, offers graduates opportunity for outdoor work in remote regions. On the other hand, the refining branch of the industry, usually located in more populous areas, offers a stable source of interesting work if this is preferred. Moreover, the industry as a whole is one of the most modern and up to date and is constantly introducing the latest technological improvements. Thus, there is every opportunity for a keen technician to advance in an interesting and profitable vocation.

The first year of the programme offered at the Institute primarily covers basic scientific and engineering principles as a foundation for the subsequent specialized petrochemical training. In the second year, two options are offered. The Gas Technology Option will provide training in the distribution and utilization of gas in both industrial and domestic fields. There will be considerable emphasis on measurement and automatic control since the trend is toward completely unmanned automatic installations. The Oil Technology Option will provide training in the transmission of oil and its utilization in modern automatically controlled refineries. There will be more emphasis in this option on the chemistry of petroleum products. Both options will include a brief orientation course in business practices and frequent opportunities for field trips to local installations.

Students desiring to enter this field should have a keen interest in the operation of large-scale equipment, as distinct from its maintenance and repair, and should have a good academic standing in chemistry and physics. Although in modern refineries most of the time may be spent indoors, technicians should be prepared to work outdoors for lengthy periods. They must be prepared, in the plant operations, to take great responsibility for the satisfactory and safe operation of highly complex plant equipment.

Employment opportunities for technicians include laboratory work, studies of corrosion of above-ground and buried structures, analysis of oils, gases, and petroleum products, right-of-way land work, and plant operation in pumping stations and refineries. With such a variety of opportunities, a qualified technician should have no difficulty in establishing himself in a profitable and interesting career.



NATURAL GAS AND PETROLEUM TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.101	Writing and Contemporary Thought	2	1
32.101	Mathematics	3	2
33.101	Physics	3	3
30.101	General Chemistry	3	3
49.101	Draughting	----	3
41.103	Engineering Materials	2	3*
51.102	Surveying	----	3
48.301	Instrumentation	----	3
	Tutorials	----	1/4†
		13	22

Term 2

31.201	Writing and Contemporary Thought	2	1
32.201	Mathematics	3	2
33.201	Physics	3	3
30.201	General Chemistry	3	3
47.221	Gas Distribution and Utilization	3	3
49.266	Shop Practice	----	2
48.401	Instrumentation	----	3
	Tutorials	----	4
		14	21

YEAR 2 — *Term 3*

No.	Subject	Hours per Week Lec.	Lab.
31.301	Writing and Contemporary Thought	1	1
32.301	Mathematics	3	2
47.341	Unit Operations	3	3
47.311	Gas and Oil Production and Transmission	3	3
30.302	Physical Chemistry	2	3
43.132	Electrical Fundamentals	2	3
90.190	Work Study	3	----
	Tutorials	----	3
		17	18

Term 4

31.401	Writing and Contemporary Thought	1	1
32.401	Mathematics	3	2
47.441	Unit Operations	3	3
90.230	Business	1	1
30.404	Organic Chemistry	2	3
90.351	Scientific Computer Programming	2	----
47.431	Oil Refining and Utilization	4	4
	Tutorials	----	5
		16	19

* Alternate weeks.
† Two hours one week and five hours the next week.

General Prerequisite: Graduation on the University Entrance Programme.

‡ *Special Prerequisites:* Mathematics 91, Physics 91.

Subjects Desirable but Not Essential (*see* General Requirements under Enrolment): Chemistry; Industrial Arts, 90 Series.

‡ NOTE.—*See* page 60 for prerequisites effective September, 1967.

Hotel, Motel and Restaurant Management

The " hospitality " industry is in a state of rapid expansion. In 1965 receipts from tourists to Canada rose to over $700 million, from $660 million in 1964. By 1967, the year of the Montreal World's Fair, this figure could reach a billion dollars. Every hotel, motel, and restaurant must be staffed by trained managers and employees to serve the tourist trade and travelling public. At present the demand for qualified administrative personnel exceeds the supply, a situation likely to become even more serious in the next few years. The need is for well-trained managers with the ability to look ahead and plan—with the flexibility of mind to adapt to rapidly changing conditions. This is the challenge!

In the two-year programme, students obtain intensive theoretical and practical training not only in general business procedures, but also in every aspect of hotel or restaurant operations: front office and housekeeping; general and departmental controls and accounting; purchasing, receiving, and storing of hotel supplies; preparation and serving of food and beverages; maintenance and engineering; planning and design; advertising and promotion; and human relations. The hotel and restaurant laboratory area at the Institute is outfitted with fully furnished typical hotel and motel rooms, a lobby and lounge, and a front desk equipped with the latest automatic billing and audit machine. Students will train in the school's cafeteria and dining-room, learning the fundamentals of food operations from the purchase of food through its preparation to the serving of a top-quality meal.

With this training, supplemented by two months of added practical experience in a hotel, motel, or restaurant between the first and second years, graduates should find ample employment opportunities. Although it is unlikely that a graduate will step immediately into a top position, after some experience at the front desk or in the general office he should, within a few years, assume such positions as front office manager, catering manager, or assistant manager of a smaller hotel. Female graduates could expect to assume executive housekeeping or management positions. Eventual promotion to full managership is up to the individual. Many other opportunities lie in the fields of industrial and air-line catering, and in other businesses associated with the problems of mass feeding and housing, such as hospitals and universities.

Graduates should be prepared to work irregular hours if necessary and be able to associate harmoniously with fellow employees and the public in general. The personal touch is imperative; in the service industries, machines can lighten the load, but they cannot replace a personality.

HOTEL, MOTEL AND RESTAURANT MANAGEMENT

YEAR 1 *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
90.103	Business Mathematics	3	3
90.135	Economics	2	2
90.140	Accounting	2	3
90.131	Management in Industry	1	1
31.102	Business Writing and Contemporary Thought	2	1
92.101	Front Office Management	2	2
92.102	Food and Beverages	3	2
90.150	Introduction to Data Processing	1	3
	Tutorials	---	2
		16	19

Term 2

90.204	Business Statistics	2	3
90.235	Economics	2	2
90.240	Accounting	2	3
90.245	Credit and Collection	2	1
31.202	Business Writing and Contemporary Thought	2	1
92.203	Bar Management and Housekeeping	2	2
92.202	Food and Beverages	3	3
92.211	English Speech	---	2
	Tutorials	---	3
		15	20

YEAR 2 *Term 3*

92.316	Human Relations	1	1
92.312	Engineering and Maintenance	1	1
92.313	Hotel and Restaurant Accounting	2	2
92.314	Planning and Design	2	2
92.315	Advertising and Promotion	2	2
90.190	Work Study	1	2
92.302	Food and Beverages	3	7
90.360	Business Law	2	1
	Tutorials	---	3
		14	21

Term 4

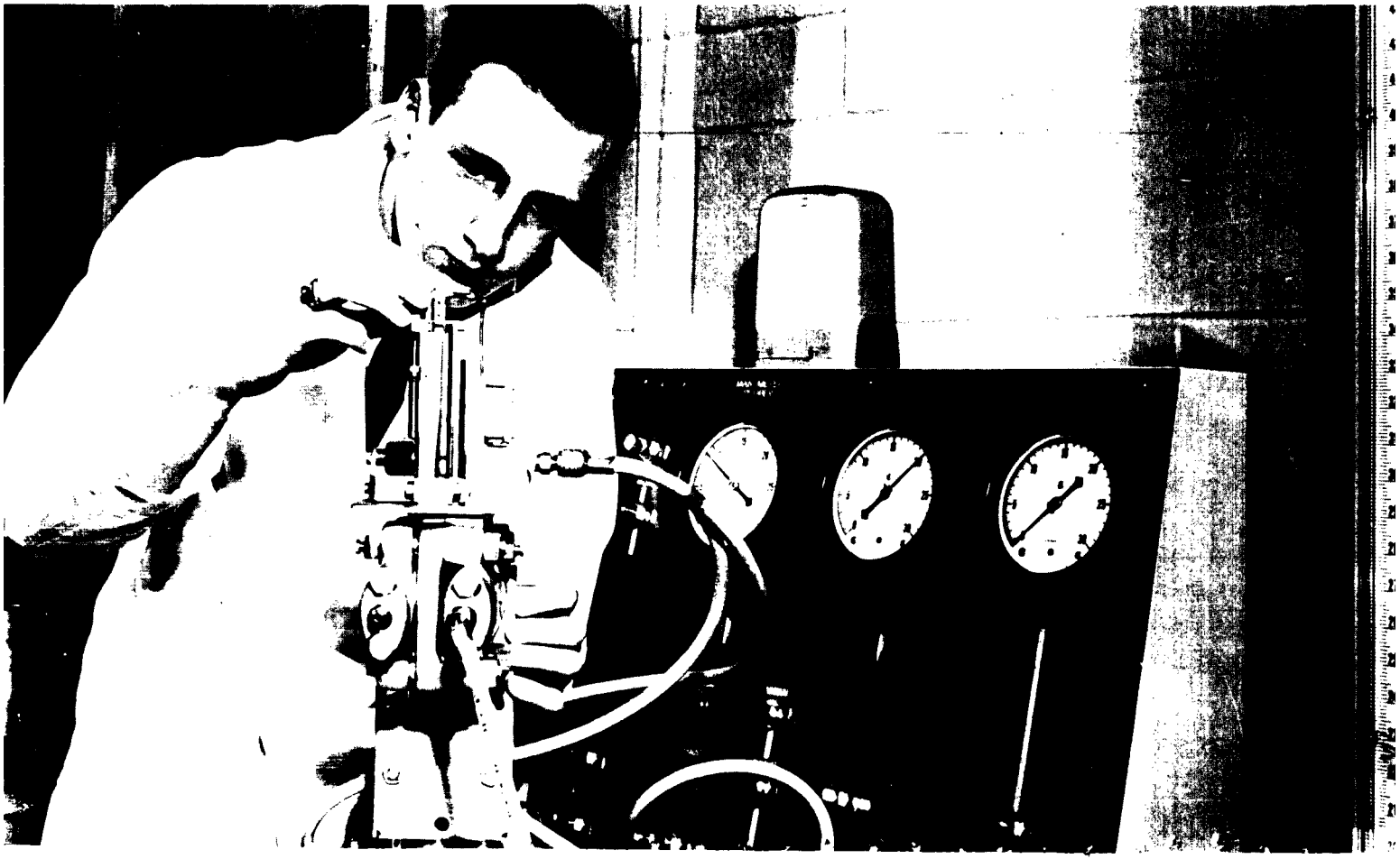
92.413	Hotel and Restaurant Accounting	2	2
92.416	Human Relations	1	1
92.412	Engineering and Maintenance	1	1
92.414	Planning and Design	2	2
92.415	Advertising and Promotion	2	2
92.402	Food and Beverages	3	7
90.460	Business Law	2	1
	Tutorials	---	6
		13	22

General Prerequisite: Graduation on the University Entrance Programme.

‡ *Special Prerequisite:* Mathematics 91.

Subjects Desirable but Not Essential (*see* General Requirements under Enrolment): English 91; French 30; Commerce 91; Typing 30.

‡ NOTE.—*See* page 60 for prerequisites effective September, 1967.



Instrumentation and Control Technology

Modern high-output production processes demand precise control of operating conditions in order to achieve satisfactory product quality at minimum cost. Industrial instrumentation provides a measurement of these operating conditions. Subsequent control can be carried out by the operator, but nowadays it is usually performed by automatic control built into the instrument. The installation and maintenance of measuring and automatic control devices are the functions of the Instrumentation and Control Technician. The equipment utilizes electronic, pneumatic, and hydraulic principles and is common to many industries such as oil and gas production and refining, pulp and paper production, atomic power-plant operation, plastics manufacture, food-processing, chemical-plant operation, primary-metals processing, and so forth. In these industries as much as 20 per cent of the capital cost may be accounted for by instrumentation, and this proportion is constantly rising as industrial processes become more complex.

The programme offered at the Institute covers in the first year the basic scientific and engineering principles used in the design and application of measuring instruments, as well as examples of the numerous commercially available versions. The primary measurements involved here are those of pressure, temperature, flow, and level. These are the variables most often controlled in industrial processes, and a wide variety of physical techniques is used for their measurement. In the second year, more complex commercial equipment will be studied, particularly modern electronic instruments, as well as the principles and practical applications of automatic control. A survey of typical industrial processes will be included since proper application of automatic control necessitates an understanding of the process being controlled as well as of the controlling equipment. Modern techniques such as telemetering and application of computers will be covered. In addition, there will be a brief orientation course in business practices.

A student desiring to enter this technology should be keenly interested in physics and mathematics and in putting his knowledge to practical use. Since this is a service to the production department of an industry, a willingness to devote one's energies to devising instruments for others is essential. The reward is the opportunity to use one's ingenuity in developing better devices, with small and sometimes delicate components, capable of controlling enormous production.

Opportunities for employment range from that of installing equipment to such functions as checking and calibrating, trouble-shooting and fault-finding under operating conditions, supervising of maintenance crews, and designing new applications and types of instruments. Further opportunities exist in the instrument-manufacturing industry for salesmen and field servicemen; also in laboratories containing specialized measuring equipment which requires maintenance by qualified instrument technicians. In these fields, exciting new developments are constantly taking place, so that an Instrument and Control Technician is assured of an interesting and rewarding career.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INSTRUMENTATION AND CONTROL TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.101	Writing and Contemporary Thought	2	1
32.101	Mathematics	3	2
33.101	Physics	3	3
41.103	Engineering Materials	2	3*
43.132	Electrical Fundamentals	2	3
48.110	Instruments	3	3
48.120	Instrument Shop Practice	----	3*
49.105	Mechanics	2	3*
	Tutorial	----	3*
		17	18

Term 2

31.201	Writing and Contemporary Thought	2	1
32.201	Mathematics	3	2
33.201	Physics	3	3
41.203	Engineering Materials	2	3*
30.202	Chemistry	2	2
43.232	Electronic Fundamentals	3	3
48.210	Instruments	3	3
	Tutorial	----	3*
		18	17

YEAR 2 — *Term 3*

32.301	Mathematics	3	2
47.341	Unit Operations	3	3
48.300	Advanced Measurements	3	3
48.310	Process Control	4	3
48.320	Production Control	1	3*
48.330	Servomechanisms	1	3*
49.101	Draughting	----	3
90.351	Computer Programming	1	1
	Tutorial	----	1
		16	19

Term 4

32.401	Mathematics	3	2
47.341	Unit Operations	3	3
48.400	Advanced Measurements	2	3
48.410	Process Control	2	3
48.420	Telemetering	2	2
48.430	Electronics for Instruments	2	2
48.440	Economics and Safety	2	1
	Tutorial	----	3
		16	19

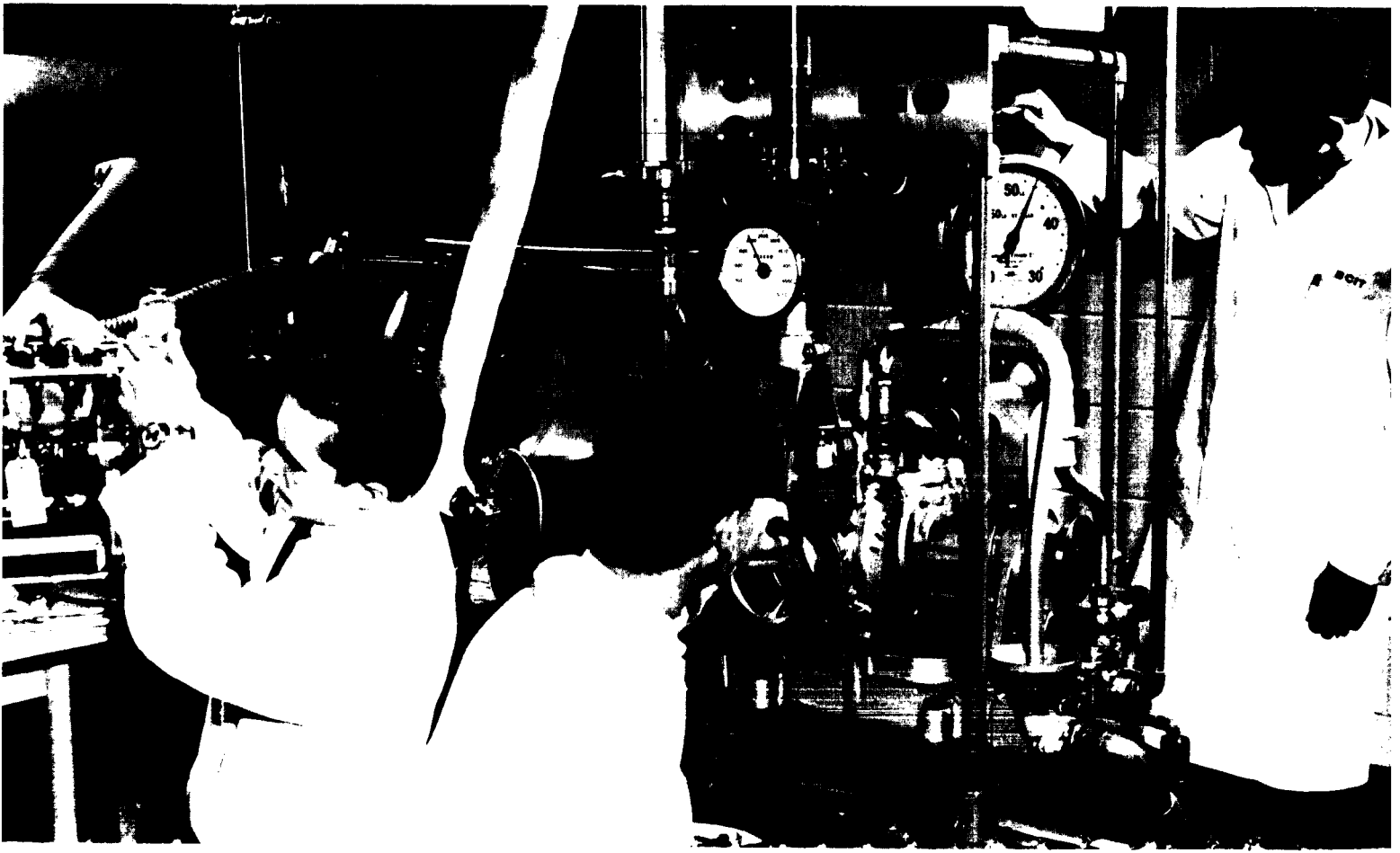
* Alternate weeks.

General Prerequisite: Graduation on the University Entrance Programme.

‡ *Special Prerequisites:* Mathematics 91, Physics 91.

Subjects Desirable but Not Essential (*see* General Requirements under Enrolment): Chemistry; Industrial Arts, 90 Series.

‡ NOTE.—*See* page 60 for prerequisites effective September, 1967.



Mechanical Technology

Mechanical Technology encompasses an extremely broad range of industrial activities involving design, construction, installation, and use of machines and mechanical devices of all types, as well as the manufacture of goods in general. It follows that persons qualified in this field can expect challenging and rewarding employment in a wide range of interesting occupations.

The two-year Mechanical Technology programme offers intensive training leading to graduation as a mechanical technician. Job possibilities include work in consulting engineering offices as mechanical design draughtsmen on machinery, steelwork, piping, power plants, and installation; in plant engineering offices, production departments, and estimating departments; in testing and inspection establishments; in field installation and service; and in machinery sales.

The programme includes studies in mathematics and physics plus specialized subjects such as engineering materials, draughting, strength of materials, machine design, estimating, thermodynamics, electricity, and machine tools. Theory presented in lectures is directly applied in problem periods, design drawing sessions, and shopwork utilizing excellently equipped laboratories and shops. In the thermodynamics laboratory, for example, students will operate and test steam boilers, air compressors, a steam turbine, gas turbine, dual-fuel engine, and other equipment, while in the machine shop they will use engine lathes, milling machines, a turret lathe, jig borer, boring mill, precision grinders, punch press, and other modern equipment.

To augment these studies, field trips will be made to industrial plants to observe practical installations and operations. Close liaison with industry will ensure that graduates are trained to meet the exacting and varying requirements of industry. Coincidentally, this liaison will acquaint students with the range of opportunities available and assist them in selecting their individual areas of greatest interest.

To span the broad field of Mechanical Technology, three options are planned, subject to adequate enrolment in each—(1) Production, (2) Design, (3) Plant Heat and Power. Choice of option will be made at the end of the first term of the second year.

Those best suited to take advantage of this training will be students interested in applying scientific knowledge to practical use in the mechanical field. The aspiring technician must have completed the University Entrance Programme, including mathematics and physics, and should be able to apply ideas in practical situations. Because the mechanical technician normally functions as a key member of a closely knit team of engineers, production supervisors, craftsmen, and others, his ability to work with people effectively and congenially is essential. Working conditions generally are attractive, and physical requirements are not demanding.

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.101	Writing and Contemporary Thought	2	1
32.101	Mathematics	3	2
33.101	Physics	3	3
49.101	Draughting	—	3
49.105	Mechanics	2	3*
41.103	Engineering Materials	2	3*
90.190	Work Study	1	2
49.165	Shopwork	—	4
49.168	Machine Tool Theory	1	1
	Tutorials	—	2
		14	21

Term 2

31.201	Writing and Contemporary Thought	2	1
32.201	Mathematics	3	2
33.201	Physics	3	3
90.230	Business	1	1
49.201	Draughting	—	3
41.203	Engineering Materials	2	3*
49.210	Strength of Materials	3	3*
49.265	Shopwork	—	4
49.268	Machine Tool Theory	1	1
	Tutorials	—	2
		15	20

YEAR 2 — *Term 3*

31.301	Writing and Contemporary Thought	1	1
32.301	Mathematics	3	2
49.301	Draughting	—	3
49.312	Machine Design	3	2
49.315	Fluid Mechanics	2	2
49.320	Estimating	1	2
49.325	Thermodynamics	2	3
43.331	Electrical Equipment	2	1
49.365	Shopwork	—	3
49.368	Machine Tool Theory	1	1
		15	20

* Alternate weeks.

Term 4

		Production Hours per Week		Design Hours per Week		Plant Heat and Power Hours per Week	
		Lec.	Lab.	Lec.	Lab.	Lec.	Lab.
31.401	Writing & Contemporary Thought	1	1	1	1	1	1
32.401	Mathematics	3	2	3	2	3	2
	Tutorials	—	4	—	4	—	4
49.445	Manufacturing Processes	2	2	—	—	—	—
49.450	Production Engineering	4	4	—	—	—	—
90.491	Work Study	1	3	—	—	—	—
49.455	Tool Design	1	2	1	2	—	—
49.465	Shopwork	—	3	—	3	—	—
49.468	Machine Tool Theory	1	1	1	1	—	—
49.412	Machine Design	—	—	3	2	3	2
49.425	Thermodynamics	—	—	3	3	3	3
49.435	Hydraulic and Pneumatic Equip.	—	—	2	3	2	3
49.440	Refrigeration and Air Conditioning	—	—	—	—	2	2
49.460	Instrumentation and Controls	—	—	—	—	1	3
		13	22	14	21	15	20

General Prerequisite: Graduation on the University Entrance Programme.
‡ *Special Prerequisites:* Mathematics 91, Physics 91.
Subject Desirable but Not Essential (*see* General Requirements under Enrolment): Industrial Arts, 90 Series.

‡ NOTE.—*See* page 60 for prerequisites effective September, 1967.

Medical Laboratory Technology

This programme provides the basic theoretical and practical portion of the 22-month course to prepare a student for the examination leading to certification as a Registered Technologist (R.T.) by the Canadian Society of Laboratory Technologists. General certification by this body qualifies the technologist for employment in any hospital or medical laboratory in Canada and in many other countries.

Candidates for this programme are accepted by one of the following training schools before being seconded to the Institute:

Vancouver General Hospital, St. Paul's Hospital, or Shaughnessy Hospital, Vancouver.

Royal Columbian Hospital, New Westminster.

Lions Gate Hospital, North Vancouver.

Royal Jubilee Hospital, St. Joseph's Hospital, or Veterans' Hospital, Victoria.

Riverview Hospital, Essondale.

Royal Inland Hospital, Kamloops.

Division of Laboratories, Health Branch, Department of Hospital Services and Hospital Insurance (subject, bacteriology only).

The course consists of nine months' training at the Institute followed by 13 months at the laboratory of the associated training school approved by the Canadian Medical Association. A nominal monthly stipend will be paid by the hospital during this latter period.

The Institute has a fully equipped modern laboratory and a full-time instructional staff. In addition, guest and part-time lecturers, drawn from a wide range of specialist, professional, and technical personnel, will contribute to the programme.

Medical laboratory technology is a rapidly advancing branch of medicine, and developments in this field create a great need for skilled workers. Working in a clinical or medical research laboratory, the medical laboratory technologist performs the many scientific tests on which pathologists and other physicians rely for assistance in diagnosing and treating disease. They have an honoured place beside doctors and nurses on the health team. Employment is also open in governmental health and food laboratories and veterinarian, bacteriological, and similar laboratories.

Persons entering this field must have a strong interest in the sciences, including mathematics, and must be meticulous in their work, dress, and habits.

MEDICAL LABORATORY TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
80.101	Medical Laboratory Workshop	6	5
80.102	Histology	2	4
80.103	Medical Bacteriology and Immunology	3	4
80.105	Hæmatology	1	2
80.107	Clinical Chemistry	2	5
	Tutorials		1
		14	21

Term 2

80.203	Medical Bacteriology and Immunology	4	6
80.205	Hæmatology	2	5
80.206	Blood Banking	2	4
80.207	Clinical Chemistry	5	6
	Tutorials		1
		13	22

Medical Radiography Technology

The British Columbia Institute of Technology provides the basic theoretical portion of a course which prepares the student for certification examinations of the Canadian Society of Radiological Technicians. The successful candidate becomes registered as "R.T.(R.)," qualified to work in diagnostic radiography. This registration is accepted across Canada and in the United States, Great Britain, Australasia, and many other countries.

Candidates for this programme are selected and enrolled by one of the following associated training schools which have been approved by the Canadian Medical Association:

Vancouver General Hospital, St. Paul's Hospital, or Shaughnessy Hospital, Vancouver.
Royal Columbian Hospital, New Westminster.
Lions Gate Hospital, North Vancouver.
Royal Jubilee Hospital or St. Joseph's Hospital, Victoria.
Kelowna General Hospital, Kelowna.
Dr. A. Turnbull and Associates, Vancouver.

Following a short period of indoctrination, students from the associated training schools are seconded to the Institute for the 19-week basic portion of the course. Following this phase, the students return to the associated training school for continued training, during which time the hospital provides a nominal monthly stipend. Provision may be made for the student to return to the Institute for a period of tutorial training prior to writing the Canadian Society of Radiological Technicians certification examination. No stipend would be paid for this period. The total training programme, with a minimum duration of 24 months, is governed by the rules and regulations of The Canadian Society of Radiological Technicians (B.C. Division), the basic standards being those prescribed by the national body of that Society.

A fully equipped modern X-ray department and related laboratories are available at the Institute. A full-time instructional staff, together with guest and part-time specialist lecturers, will provide the student with a sound knowledge of the basic sciences and techniques associated with radiography. Radiography, the exposing of film by means of X-rays to show the structures of the body, is a very important aid in the diagnosis of illness or injury. Persons in this field must have a strong sense of responsibility, a high degree of integrity, an interest in people, together with a desire to serve humanity in an effort to discover, prevent, and treat disease. This occupation is not dangerous to health as radiation hazards are well appreciated and any exposure to personnel is easily within the minimum acceptable range recognized by national and international authorities.

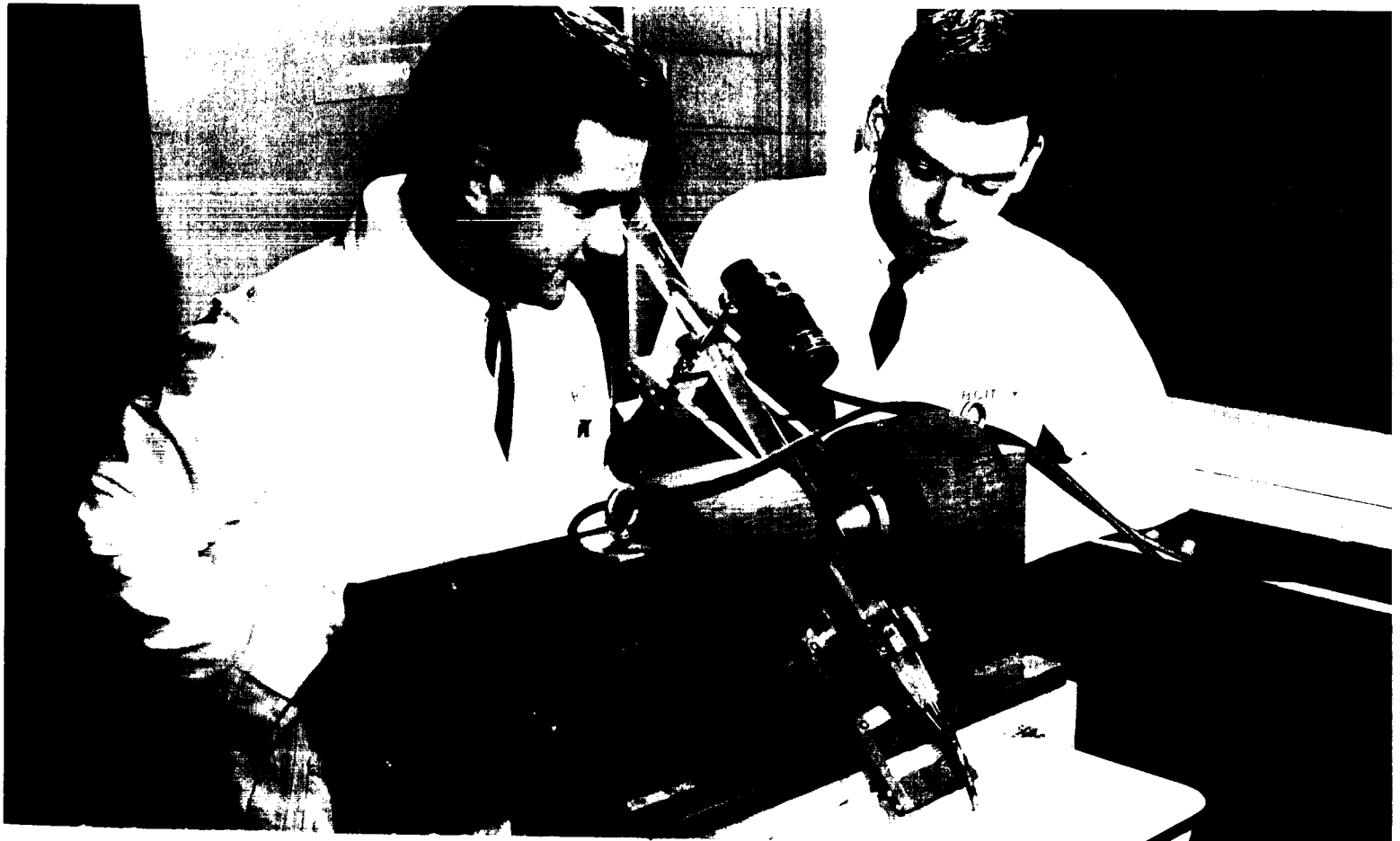

BCIT

MEDICAL RADIOGRAPHY TECHNOLOGY

HOURS OF INSTRUCTION—19-WEEK COURSE

No.	Subject	Hours per Week Lec.	Lab.
81.001	Anatomy and Physiology	5	2
81.002	Physics of Medical Radiography	4	2
81.003	Radiographic Technique	4	2
81.004	X-ray Apparatus	2	3*
81.005	Radiobiology and Protection	2	3*
81.006	Related Radiomedical Studies	5	2
	Tutorials	....	2
		22	13

* Alternate weeks.



Mining Technology

During the past decade as a supplier of metals to the entire world, Canada has been increasing its share of the market and has now become a major producer of such metals as iron, asbestos, lead, nickel, silver, and zinc. Western Canada is now about to experience an unprecedented expansion of the mining industry. Exploration in British Columbia and the Yukon is more active than anywhere in North America, and the area is considered to be the most promising mineral-bearing region on the continent. Coupled with this is the great interest shown in the non-metallic mineral deposits now being developed on the Prairies. Several major discoveries, currently being examined, offer reasonable assurance of production and consequent demand for engineers and technicians.

Because of strong international competition, the higher costs of operation in our rugged terrain, and the increasingly complex ores now being sought, the industry is becoming much more reliant upon engineering imagination and technological skill.

The programme of Mining Technology is designed to serve this major industry by preparing technicians to help search for new mineral deposits, develop and operate new mines, and design and operate new mineral-processing plants. Most students who complete this programme can expect to enter the industry as exploration assistants mapping structure, logging drill core, or performing geophysical and geochemical tests in the field; as engineering assistants sampling developed rock, surveying in pits or underground, or doing production control work in mines; or as test laboratory technicians, assayers, or junior operating staff in mineral-processing plants.

Opportunities for advancement in this industry are good for a person of ability and initiative, and, possibly within five years of graduation, he might well achieve a supervisory rank as party chief, shiftboss, or foreman.

Men entering the mining industry should be able to get along with people, be able to enjoy life in smaller communities, and be willing to travel. They should also have good health and be able to pass a medical examination and chest X-ray if they wish to work in or around a mine.

MINING TECHNOLOGY

No.	Subject	Hours per Week Lec.	Lab.
	YEAR 1 *Term 1*		
31.101	Writing and Contemporary Thought	2	1
32.101	Mathematics	3	2
33.101	Physics	3	3
30.101	General Chemistry	3	3
49.101	Draughting	---	3
41.103	Engineering Materials	2	---
51.102	Surveying	---	3
50.101	Geology	2	2*
50.102	Mining	2	---
	Tutorials	---	1/3†
		17	18
	Term 2		
31.201	Writing and Contemporary Thought	2	1
32.201	Mathematics	3	2
33.201	Physics	3	3
30.201	General Chemistry	3	3
49.201	Draughting	---	3
41.203	Engineering Materials	2	---
51.202	Surveying	---	3
50.201	Geology	2	2*
50.202	Mining	2	---
	Tutorials	---	1/3†
		17	18
	YEAR 2 *Term 3*		
90.230	Business	2	1
31.301	Writing and Contemporary Thought	1	1
32.301	Mathematics	3	2
42.103	Statics	2	2
41.305	Assaying (Laboratory Option)	1	6
41.306	Assaying (Mining Option)	1	3
51.305	Surveying (Mining Option)	---	3
50.301	Geology—Structural	2	3*
50.304	Mineral Processing	2	3*
50.302	Mining—Operation	2	---
50.303	Mining—Equipment	---	2
	Tutorials	---	3
		15	20
	Term 4		
31.401	Writing and Contemporary Thought	1	1
32.401	Mathematics	3	2
33.401	Geophysical Prospecting Methods	---	2*
42.205	Strength of Materials	---	3
42.202	Hydraulics	2	2*
41.405	Assaying (Laboratory Option)	1	6
41.406	Assaying (Mining Option)	1	3
51.405	Surveying (Mining Option)	---	3
50.401	Geology—Mineral Deposits	2	3*
50.404	Mineral Processing	2	3
50.402	Mining Operation	2	---
50.403	Mining Equipment	---	2*
	Tutorials	---	3/5*
		13	22

* Alternate weeks.

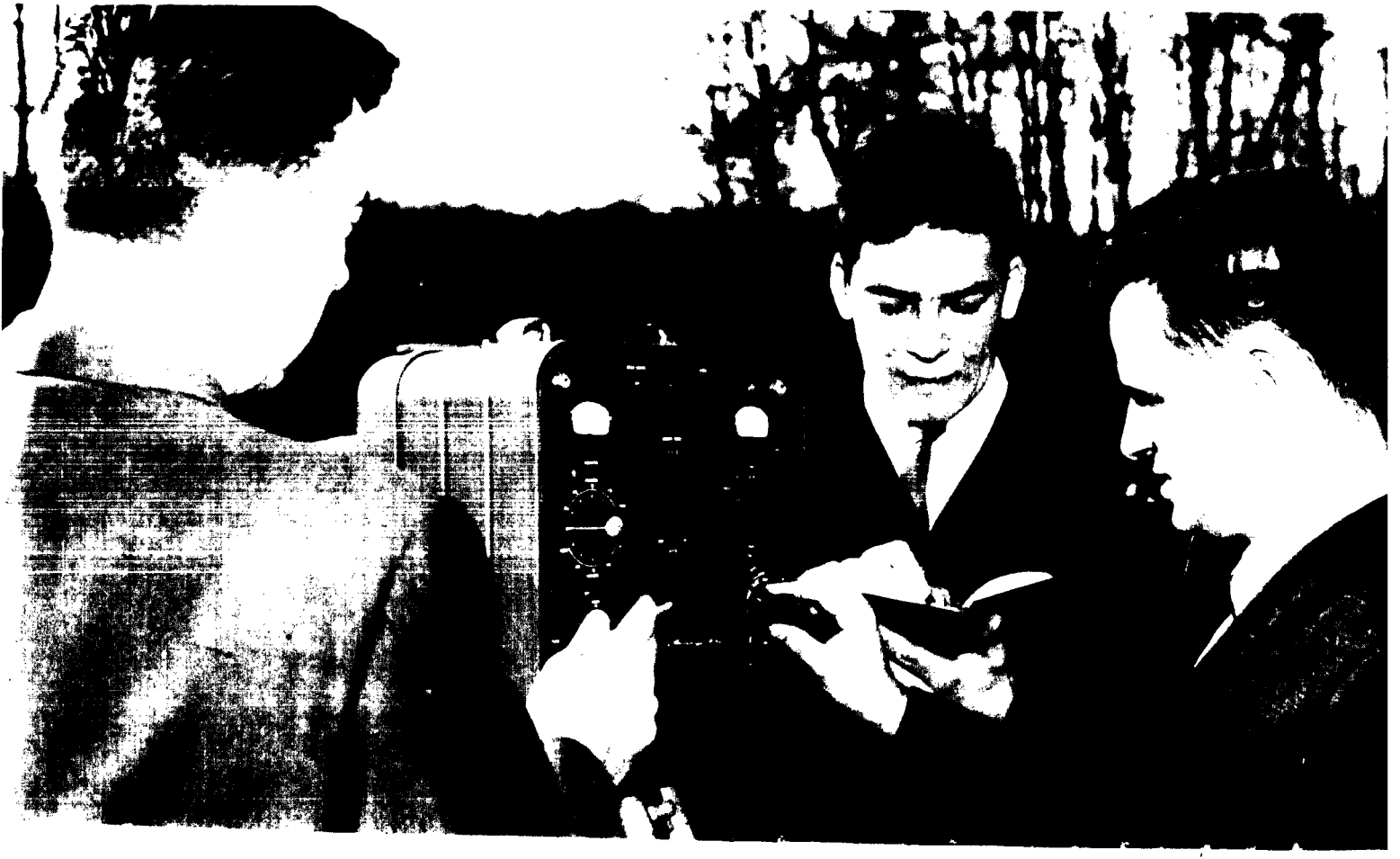
† One hour one week and three hours next week.

General Prerequisite: Graduation on the University Entrance Programme.

‡ *Special Prerequisites:* Mathematics 91, Physics 91.

Subjects Desirable but Not Essential (*see* General Requirements under Enrolment): Chemistry; Industrial Arts, 90 Series.

‡ NOTE.—*See* page 60 for prerequisites effective September, 1967.



Surveying Technology

Survey techniques have undergone radical changes during the last two decades, due largely to advances in the development of electronic devices which are capable of measuring distance up to 40 miles with an accuracy of three parts per million, and significant refinements which have been made in photographic equipment and their applications to aerial photogrammetry.

The two-year programme in the Surveying Technology has two main objectives. The first is to equip the student with the required knowledge of mathematics, physics, astronomy, photogrammetry, and theory of surveying, together with the practical skills in note-keeping, draughting, field operations, and calculating so that he may be employed as a surveying or engineering assistant in the various fields where survey techniques are used. The second objective is to provide those students with the knowledge and skills which, with experience, will eventually qualify them as members of the Corporation of Land Surveyors of British Columbia.

Intensive courses will be given in mathematics, physics, photogrammetry, astronomy, natural science and descriptions for deeds, in which the standards are those required by the Corporation of Land Surveyors of British Columbia. A student who has successfully completed this programme may, after three years of articles with a qualified land surveyor, sit for the final examination of the Corporation and obtain a commission as a British Columbia land surveyor.

Employment opportunities in survey fields are widely varied. Surveyors, consulting engineers, the oil and gas industry, government mapping departments, government highway departments, utility companies and civic planning and engineering departments are among those that offer employment to graduates. Areas of employment in Canada range from the southern border to the Arctic regions and from the Pacific to the Atlantic Ocean and many Canadian surveyors are employed on large mapping projects throughout the world.

The student requires a good basic understanding of mathematics and physics to the University Entrance level and should also be physically and mentally suited to outdoor and office work.

SURVEYING TECHNOLOGY

No.	Subject	Hours per Week Lec.	Lab.
	YEAR 1 *Term 1*		
31.101	Writing and Contemporary Thought	2	1
32.101	Mathematics	3	2
33.101	Physics	3	3
49.101	Draughting	----	3
51.101	Surveying	2	8
42.102	Hydraulics	2	2*
51.103	Natural Science	1	2
	Tutorials	----	1/3†
		13	22
	Term 2		
31.201	Writing and Contemporary Thought	2	1
32.201	Mathematics	3	2
33.201	Physics	3	3
90.230	Business	2	----
49.201	Draughting	----	3
51.201	Surveying	2	8
	Tutorials	----	6
		12	23
	YEAR 2 *Term 3*		
31.301	Writing and Contemporary Thought	1	1
32.301	Mathematics	3	2
51.301	Surveying	3	8
51.306	Astronomy	3	----
51.307	Photogrammetry	2	----
51.302	Description for Deeds	2	----
51.303	Draughting	----	6
	Tutorials	----	4
		14	21
	Term 4		
90.190	Work Study	----	2
31.401	Writing and Contemporary Thought	1	1
32.401	Mathematics	3	2
51.401	Surveying	2	12
51.406	Astronomy	2	3
51.407	Photogrammetry	2	2
	Tutorials	3	----
		13	22

* Alternate weeks.

† One hour one week and three hours next week.

General Prerequisite: Graduation on the University Entrance Programme.

‡ *Special Prerequisites:* Mathematics 91, Physics 91.

‡ NOTE.—*See* page 60 for prerequisites effective September, 1967.

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SUBJECT SUMMARIES

SUBJECT NUMBERING SYSTEM

Subjects are numbered to indicate the technology or department under which instruction is given, the term, and the subject material. The first two figures indicate the parent technology or department, the third figure indicates the term in which a subject is normally taught, the last two figures indicate the subject description. In the example 31.201, the "31" shows that the subject is offered by the English Department, the "2" shows that the subject is normally taught in the second term, the "01" stands for the subject description. The departments and technologies with their corresponding numbers are as follows:

30—Chemistry.
31—English.
32—Mathematics.
33—Physics.
40—Building.
41—Chemical and Metallurgical.
42—Civil and Structural.
43—Electrical and Electronics.
44—Food.
45—Forestry.
46—Forest Products Utilization.
47—Natural Gas and Petroleum.
48—Instrumentation and Control.
49—Mechanical.
50—Mining.
51—Surveying.
80—Medical Laboratory.
81—Medical Radiography.
90—Business Management.
91—Broadcast Communications.
92—Hotel, Motel and Restaurant Management.

CHEMISTRY

30.101, 30.201 General Chemistry

Atomic structure and bond types; stoichiometry; chemical equations; gas laws; liquids and solids; properties and types of solutions; acids and bases; chemical kinetics and electro-chemistry.

Inorganic qualitative analysis. Organic compounds: structure and classes, physical properties; saturated and unsaturated hydrocarbons; catalysts; acetylene; petroleum hydrocarbons, aromatic hydrocarbons, alcohols, ethers; aldehydes and ketones, carboxyls, amines; carbohydrates; amino acids and proteins; vitamins, hormones, and drugs.

30.201 *See* 30.101.

30.202 Chemistry

Atomic structure and bond types; stoichiometry; chemical equations; gas laws; liquids and solids, properties and types of solutions; chemical kinetics, electro-chemistry, nuclear chemistry.

Laboratory experiments designed to illustrate the chemical properties and types of solutions; chemical kinetics, electro-chemistry, nuclear chemistry.

Laboratory experiments designed to illustrate the chemical principles above and applications of control instruments or processes largely dependent upon electrical energy.

30.301, 30.401 Organic Chemistry

A general course in organic chemistry in which the properties and reactions of all major classes of organic compounds are described: aliphatic and aromatic hydrocarbons, alcohols, acids, phenols, aldehydes, ketones, amines, amides, amino acids, sulphur compounds, carbohydrates, heterocyclic compounds, dyes, and polymers. Reaction mechanisms are introduced where these are of value in assisting the student to organize the material.

Laboratory work consists of the instruction and demonstration of some of the more important reactions which complement the lecture material, and the qualitative analysis of organic compounds.

30.302 Physical Chemistry

The course presents the kinetic theory of gases, the first and second laws of thermodynamics, the study of crystals by X-ray diffraction, the phase rule, chemical kinetics, and catalysis. Laboratory work consolidates lecture material and gives experience in practical physical chemical measurements.

30.303 Instrumental Analytical Methods (for Food Technology)

This course involves a critical review of basic theoretical concepts, instrument construction and operation, and general applications of the following methods: potentiometric methods, amperometric titrations, polarographic methods, visible spectrophotometry, ultraviolet spectroscopy, infrared spectroscopy, flame photometry, refractometric method, polarimetry method, solvent extraction analysis, column chromotography, paper chromotography, nitrogen determinations, and radio-isotopes.

30.304 Chemical Laboratory Techniques

This course teaches basic techniques in sampling, weighing, moisture determinations, ashing, extractions, filtration gravimetric methods, volumetric methods; instrumental analysis and separation methods will be described, demonstrated, and, whenever possible, practised.

30.401 *See* 30.301.

30.404 Organic Chemistry

This course presents a survey of the major classes of organic compounds found in petroleum or in refinery products: paraffins, cycloparaffins, olefins, alkynes, aromatic compounds, sulphur, and heterocyclic compounds. The chemistry of refining processes and the production of some petrochemicals will be presented.

The laboratory work demonstrates some of the reactions of organic compounds described in the lecture material. Some of the chemical steps of the refining processes will also be performed in the laboratory.

ENGLISH

31.101, 31.201 Writing and Contemporary Thought

The course will consist of two parts. Part A comprises a review of the principles of composition, emphasizing the two main prose forms, description and argument, and the methods of development writers commonly use for these forms; a brief survey of the history of English, the principles of semantics, and the logic of argument; and the application of all the preceding material to the writing of technical reports. Part B is concerned with the analysis of some major problems of the 20th century, as they are presented in modern literature.

31.102, 31.202 Business Writing and Contemporary Thought

The course will consist of two parts. Part A comprises a study of the applications of the basic principles of composition, semantics, and social psychology to the writing of business letters and reports. Part B is concerned with the analysis of some major problems of the 20th century as they are presented in modern literature, with particular emphasis on the social consequences of science and technology.

31.103, 31.203 Writing and the Mass Media

The course will consist of two parts. Part A comprises brief examinations of the history of English, the relations between language and culture, semantics, the methods of argument and persuasion, and the application of the preceding material to the writing of letters, reports, and scripts. Part B consists of studies in the development, nature, effects, and uses of the media of mass communication.

31.201 *See* 31.101.

31.202 *See* 31.102.

31.301, 31.401 Writing and Contemporary Thought

The first part of the course continues the instruction in technical writing provided in the first year; the second year's work is mostly concerned with substantial writing projects on topics arising out of the student's special field. The second part continues the attempt of the first year's work to analyse the social context of technology and the technician in the modern world, through the study of modern essays, short stories, and novels.

31.303, 31.403 Writing and Modern Literature

The course consists of a study of some representative modern fiction and drama, with the intention of developing in the student some understanding of the methods and aims of writers.

31.401 *See* 31.301.

31.403 *See* 31.303.

MATHEMATICS

32.101 Mathematics

Angular measurement in degrees and radians. Applications of radian measure; angular velocity. The trigonometric functions of any angle. Graphs of the trigonometric functions. Application of trigonometry to vectors. Oblique triangles; the sine law; the cosine law; areas. Trigonometric problems in three dimensions. Inverse trigonometric functions. Systems of linear equations; applications; solution by determinants. Introduction to statistics; graphical representations; frequency distributions. Measures of central tendency; mean; median; mode. Measures of variability; mean deviation; quartile deviation; the standard deviation. Empirical curve fitting; method of least squares.

32.102, 32.202, 32.302 Mathematics

The topics for this complete course are the same as those under Mathematics 32.101, 32.201, 32.301, and 32.401, with applications throughout in the field of electrical and electronic technology, plus special topics such as the algebra of switching circuits.

32.104 Statistics

The meaning of statistics. Organization and presentation of data. Measures of central tendency and of dispersion. Frequency distributions. Significance of results. Regression and correlation. Test of a hypothesis. Prediction.

Such subsidiary topics in mathematics as are required.

32.201 Mathematics

Quadratic functions; radical equations. Polynomial equations. Complex numbers; algebraic, trigonometric, and polar forms; application to vectors. Fundamental trigonometric identities; trigonometric functions of sum and difference of two angles; double-angle formulas. Trigonometric equations. The binomial theorem for all real exponents; application to approximations. Theory of logarithms; the number *e;* natural logarithms. Inequalities. The straight line; inclination and slope. Limits. Slope of a curve. Instantaneous rate of change with physical applications. Differentiation and the derivative. Rules for differentiating functions of the type ax^n and sums of such functions, composite functions, products and quotients of functions, implicit functions. The second derivative. Applications of the derivative; maximum and minimum values; curve tracing; related rates. Integration as the reverse of differentiation; rules for integrating sums of functions of the type ax^n ($n \neq -1$); application to physical problems. The differential. Areas under curves related to integration; volumes of solids of revolution.

32.202 *See* 32.102.

32.301 Mathematics

Review of the calculus items discussed under Mathematics 32.201. Differentiation and integration of trigonometric functions. Differentiation and inte-

gration involving logarithmic and exponential functions. Further application of the derivative in problems involving rates of change, tangents to curves, motion in one or two dimensions, related rates, maxima and minima, solution of equations. The definite integral; application in problems involving areas, volumes, first and second moments, mean values, work, and other topics pertinent to the technology. Curve sketching involving ideas as symmetry, asymptotes, existence, intersections. The conic sections and calculus problems associated with these. Parametric equations and their differentiation. Polar co-ordinates and graphs. Power series for elementary functions. Further methods of integration. Elementary differential equations.

32.302 *See* 32.102.

32.401 Mathematics

Review of the statistical items discussed under Mathematics 32.101. Standard scores. Moments, skewness, and kurtosis. Probability; expectation. The binomial and Poisson distributions; the normal curve. Populations and samples; sampling techniques; sampling distributions. Problems of estimation; small samples and Student's t-distribution; confidence limits. Tests of hypotheses; significance. The chi-square distribution; goodness of fit. Control charts. Linear regression. Correlation; correlation coefficient. Rank correlation. Contingency coefficient. Time series; index numbers.

In order that the student can acquire sufficient understanding to design his own computing techniques, instruction will be given in the use of desk calculating machines. It will cover the fundamental mathematical manipulations that lend themselves to machine calculations and the expression of these calculations in written programmes. The calculators will be available to facilitate the computations required in the above course.

PHYSICS

33.101, 33.201 General Physics

This course is designed to satisfy the background knowledge required in the various technologies and consequently covers elementary aspects of the various fields of physics: structure and properties of matter, statics, kinematics, Newton's laws of motion, angular motion, fluids, sound, calorimetry, thermal behaviour of gases, thermodynamics, electromagnetism, d.c. circuits, brief treatment of simple a.c. circuits, applied electricity, geometrical optics, wave optics, applied optics, atomic and nuclear phenomena. Mathematical treatment requires only algebra and trigonometry; calculus may be introduced near the end of the term. Thorough grounding in secondary-school physics is presumed.

33.102, 33.202 Introductory Physics

This course covers approximately the same material as Physics 33.101, 33.201, but is designed for those technologies for which secondary-school physics is not a prerequisite.

33.201 *See* 33.101.

33.202 *See* 33.102.

33.301 Electricity and Magnetism

This course is designed for the Electrical Power Option in the Electrical and Electronics Technology. Electric forces and fields; Gauss' law; conductors; dielectric materials; magnetic and Lorentz forces; magnetic fields; magnetic moments; Biot-Savart law; solenoids and toroids; Ampere's line integral law; magnetic materials; hysteresis and eddy currents; electromagnetic induction; Faraday's law; transformers; modern developments—photoelectric emission, fusion power devices, atomic energy and electric power, fuel cells, magnetohydrodynamics.

33.302 Electricity and Modern Physics

This course is designed for the Electronics Option in the Electrical and Electronics Technology. Electric charge, potential, and field; principles of the cathode ray tube, magnetron, klystron, and particle accelerators, Gauss' theorem, electronic energy levels in metals, semi-conductors and insulators, Fermi levels, generation and recombination of carriers, theory of diode, transistor, maser and laser. Quantum principles, origin of spectral lines, Balmer series. The photo-electric equation, thermionic and field emission. Nuclear physics—instrumentation and radioactivity.

33.401 Introduction to Geophysical Prospecting Methods

This course will stress points of particular interest to those engaged in exploring and developing mineral bodies, rather than those aspects of more interest in oil exploration. Gravity methods: basic physical principles, Newton's law of gravitation, gravity gradients and curvatures; measuring instruments; gravity measurements on land and over water-covered areas; reduction and interpretation of gravity data; comparison to known geologic structures. Magnetic prospecting: basic concepts and definitions, magnetic susceptibilities of rocks; prospecting instruments; field procedures; air-borne magnetometer surveys; reduction and interpretation of data. Electrical and electromagnetic prospecting: electrical properties of rocks; self-potential and equi-potential methods; resistivity methods; inductive methods. Prospecting for radioactive minerals: fundamental principles; prospecting equipment; examples of radioactivity surveys.

81.002 The Physics of Medical Radiography

The elements of electricity and modern physics with an emphasis of those aspects of these topics related to medical radiography. Topics include such matters as the structure of matter, static electricity, d.c. electricity, magnetism and electromagnetic effects, pulsating and alternating currents, X-ray and valve tubes, X-ray circuitry, the production and nature of X-rays, their interaction with matter, dosage and dosimetry, X-ray protection, radioactivity.

Physics for Medical Laboratory Technicians

Selected topics in mechanics, heat, and optics are discussed in a generally non-mathematical treatment. Included are measurements and dimensions, Archimedes' principle, hydrometer, weighing, balances, temperature scales, laws of reflection and refraction, interference, diffraction, optical instruments, angular motion and the centrifuge. Students receive laboratory instruction on the use of the vernier scale.

This short course constitutes approximately 10 hours of lectures as part of 80.001, General Knowledge and Introduction to the Clinical Laboratory. The scope of the course will be expanded in the future if time permits.

BUILDING

40.101, 40.201 Design and Draughting

Fundamentals of design, æsthetic and functional; design of utilitarian objects; architectural design principles.

Advanced draughting; lettering; isometric; perspective; presentation techniques, sketching; colour; model building; simple architectural design.

Visiting lecturers.

40.102, 40.202 Building Construction

Principles of building construction in terms of the assembly of materials; examination of typical systems of wood and masonry construction; preliminary introduction to characteristics of materials; study of architectural detailing.

Application of the above to the preparation of working drawings, in coordination with courses in Building Structures and Building Sciences. Trips to building sites and plants.

40.103, 40.203 Building Services

Introduction to building services complex; water supply; waste disposal; heating; electrical illumination. Emphasis on fundamentals and interrelation of services.

Preparation of working drawings for mechanical and electrical systems. Field trips.

40.104 Building Regulations

Origins and purposes of building regulations; typical zoning by-laws and building by-laws. National Building Code; other Acts, codes, by-laws, and regulations related to buildings.

Aspects of common law and law of contract related to building premises.

40.201 *See* 40.101.

40.202 *See* 40.102.

40.203 *See* 40.103.

40.301, 40.401 Design

Short history of architecture and building, particularly since the Industrial Revolution; contemporary architectural masterpieces, with analysis of their planning, structure, services, æsthetic quality, landscaping.

Draughting-room exercises in architectural design, integrated with other courses, sketching and rendering; model making.

During the summer months between first and second years, students will be required to prepare an illustrated report. This will be presented at the commencement of second year and be marked as part of the second-year Design course.

40.302, 40.402 Building Construction

Continuation of first-year course, but applied to concrete and steel framed buildings; shop and site fabrication and assembly; prefabrication.

Application of the above to the preparation of working drawings, in coordination with the courses in Building Structures and Building Sciences. Trips to building sites and plants.

40.303, 40.403 Building Services

Ventilation; air conditioning; electrical illumination and power supply; mechanical equipment; transportation; communication; acoustics.

Preparation of working drawings related to above, and to projects in Design and Building Construction. Field trips.

40.305, 40.405 Materials and Specifications

Physical and chemical properties of building materials, their manufacturing processes and stock sizes and grades on the market.

Competitive bidding process; principles of specification writing; specifications by trades; standard codes and specifications.

Projects integrated with other courses.

40.306 Construction Management

Organization and administration of construction; architect-engineer-contractor relationship; design-estimating-tendering process; co-ordination of labour and materials on site; fundamentals of good supervision; legal and financial aspects of contracting; R.A.I.C. standard documents; insurance, bonding, lien acts, etc.

Work correlated with Work Study course. Visiting lecturers.

40.401 *See* 40.301.

40.402 *See* 40.302.

40.403 *See* 40.303.

40.405 *See* 40.305.

40.407 Estimating

Fundamentals of cost accounting; cost records; cost breakdown; unit costs; principles of quantity surveying; bill of materials; unit prices; proportionate allowances for labour, location, and time; approximate and quick estimating procedures.

CHEMICAL AND METALLURGICAL

41.102, 41.202 Laboratory Workshop

Use of hand and bench tools; soldering, brazing, gas welding, heli-arc welding, and other joining techniques. Glass-blowing techniques; repair of chemical glassware and construction of simple apparatus. Design and fabrication of apparatus for chemical and metallurgical laboratory use; consideration of problems, choice of materials, design of fittings, etc.

41.103, 41.203 Engineering Materials

Interatomic forces, bonding; crystal structure, imperfections, grain boundaries, grain growth; glassy state, ceramic materials; organic polymers, composite materials, organic cements; inorganic cements; elasticity, tensile strength, stress-strain curves; plastic deformation of ductile solids, work hardening, recrystallization; alloy systems, equilibrium phase diagrams; properties of alloys, phase transformations in solids; oxidation at high temperatures; corrosion in aqueous solution; protective coatings. Laboratory assignments in physical testing of materials, properties of materials in operating environments, and comparison of materials.

41.202 *See* 41.102.

41.203 *See* 41.103.

41.303, 41.403 *Analytical Chemistry*

Conventional inorganic methods of analysis for the determination of the common metals in ores and alloys. Basic methods of fire assaying for gold and silver. Advanced analytical techniques using various instruments such as the polarograph, spectrophotometer, colorimeter, gas chromatograph, refractometer, spectrograph, X-ray scintillometer, X-ray diffractometer, etc.

41.304, 41.404 Physical Metallurgy

Review of crystal structure of metals; nature and behaviour of solid solutions, phase diagrams of binary systems, the iron-iron carbide system. Steel metallurgy: austenite transformation, effect of cooling rate of structure, isothermic transformation; effect of alloying elements; hardenability. Heat treatment of steel: annealing, normalizing, hardening, martempering, austempering, nitriding, carburizing, controlled atmosphere, and salt-bath techniques.

Properties of the non-ferrous alloys: light-metal alloys, copper-base alloys, refractory-metal alloys.

Metallurgical testing, macro-etching; metallography, specimen preparation, choice of etchant; use of the microscope, microphotography.

41.305, 41.405 Assaying (Laboratory Option)

Analytical chemistry applied to the ore minerals with special attention to fire assaying for gold and silver. Both titration and instrument techniques including X-ray diffraction are developed for the more common metals, and the student will be encouraged to attempt as soon as possible after graduation from the Institute the examinations for the Provincial Government licence to practise assaying in British Columbia.

41.306, 41.406 Assaying (Mining Option)

Similar to that for laboratory option but with only half the laboratory time and consequent reduction in application of theory.

41.403 *See* 41.303.

41.404 *See* 41.304.

41.405 *See* 41.305.

41.406 *See* 41.306.

CIVIL AND STRUCTURAL

42.101, 42.201 Civil Engineering

Historical development of civil engineering; introduction to general organization of construction projects; control of financial and technical aspects of construction.

Harbour and dock engineering; foreshore protection; river improvement; canals; drainage; irrigation; pollution and conservation. Problems involving associated subjects and principles.

Visiting lecturers and field trips.

42.102 Hydraulics

The hydrological cycle—run-off phase, hydrological equation. Precipitation—causes, characteristics, measurement, measuring devices. Snow—measurement, typical melting conditions, results of melt run-off. Hydrographs, mass curves, frequency curves, intensity curves, other graphical representation of data. Storms and statistical probability. Sub-surface water and simple ground-water surveys, infiltration, extraction of ground water, storage coefficients, maximum yield of wells. Stream-flow measurement, peak discharge and flood run-off, flow in open channels. Bernoulli equation, flow in pipes, simple pressure piped systems, waterworks equipment.

42.103 Statics

Historical development and relation to structural design; vectors; force systems; graphical representation; resultants and components; moments and couples; conditions of equilibrium; force polygon; funicular polygon; co-planar systems; three-dimensional systems; frames and trusses; stress diagram and Bowes notation; chains and cables; vertical shear force and bending moment diagrams; related problems and experiments with emphasis on bridge and building structures, retaining walls.

42.104 Concrete Technology

Cement—types, chemistry, manufacture, and testing. Aggregates—sources, types, production, and testing. Concrete properties—strength, durability, permeability, workability, and testing. Concrete mix design. Production—mixing, transporting, placing, finishing, and curing. Formwork—design, construction, and stripping. Concrete products—precast, block, pipe, etc. Special topics—cold-weather concreting, colouring, finishing, additives.

Laboratory experiments and a field trip.

42.120 Building Structures

Historical development and relation to structural design; vectors and force systems; graphical representation; resultants and components; moments and couples; conditions of equilibrium; force polygon; funicular polygon; co-planar systems; three-dimensional systems; frames and trusses; stress diagram and Bowes notation; chains and cables; vertical shear force and bending moment diagrams; related problems and experiments with emphasis on building structures, retaining walls.

42.201 *See* 42.101.

42.202 Hydraulics

Hydrostatics, properties of fluids, pressure, centre of pressure; flow of fluids, equation of continuity, velocity head, venturi, jets; orifices; notch and weir, friction and pipe flow; Reynold's experiments, sudden stoppage, water hammer; viscous flow, laminar and turbulent; open channel flow, regular channels, hydraulic jump, irregular channels; backwater curve, dimensional analysis, dynamic similarity, model testing; meters, valves, pumps, and turbines.

Laboratory experiments form a basic part of this course.

42.204 Design

Historical development of contemporary structural systems; loading, types and assumptions; principles of working stress design and ultimate

load design; tension members in steel and timber; connections in steel and timber; compression members under axial loading; trusses and frames; theory of flexure and distribution of bending and shear stresses; deflexion and design of beams in steel and timber; combined bending and compression; eccentrically loaded columns; principles of bending in reinforced concrete; design of simple beam and slab with tensile reinforcement only; related problems and model experiments.

42.205 Strength of Materials

Simple stresses; stress, strain elasticity; compound bars and columns; temperature stress; elastic limit; limit of proportionality; yield; ultimate; factor of safety; load factor; ductility; resilience; fatigue; shock.

Properties of sections; bending moments; shear forces; theory of flexure; slope and deflection of beams; restrained and continuous beams.

Strut theories; eccentric loading; lateral loading.

Compound stress and strain; ellipse of stress; Poisson's ratio; principal stresses and strains; Mohr's circle.

Testing techniques; machines; extensometers; strain gauges; brittle lacquers; photo elasticity; evaluation of results.

42.220 Building Structures

Historical development of structural systems; contemporary structures; principles of structural design; discussion of structural materials and their properties.

Assumptions of loading and types of loading; stress, strain, and elasticity; simple stresses; temperature stresses; composite material and resultant stresses; yield; factors of safety and load factors.

Properties of sections, bending moments, and shear forces; theory of flexure; slope and deflection of beams; restrained and continuous beams.

Axially loaded columns; tension and compression members; connections.

Introduction to soils, foundations, piling, and retaining walls.

42.301 Civil Engineering

Dams, flood control, power developments; transportation engineering, railways, highways, airports, harbours; water supply and sewerage; tunnelling; bridges and buildings; municipal engineering, planning, city services.

Problems involving principles covered in associated subjects; visiting lecturers and field trips.

42.306 Structural Design and Draughting

Plate web girder; built-up sections in steel and timber; beam column connections; steel and timber detailing and fabrication.

Restrained and continuous beams; strain energy; column analogy; moment distribution; tapered beams.

Reinforced-concrete beams; tee beams; compressive reinforcement; one-way and two-way slabs; footings and retaining walls; reinforcing detailing, scheduling, and placing; design of formwork.

Problems and experiments in application of principles to structures.

42.307 Soil Mechanics and Foundations

Fundamentals of geology; rocks and minerals; formation of soils; site exploration, methods of sampling, testing in-situ; classification of soils; the soil particles; structure of soils, porosity, void ratio, moisture content; per-

meability, ground-water movement, frost action; consolidation theory, settlement; shear strength and deformation; stability of slopes; bearing capacity; excavations; spread footings; piling; earth retaining structures.

42.308 Highway Engineering

Highway geometry: curves, spirals, superelevation, widths, sight distances, surfaces, grades, safety, signs, and lighting. Highway performance: foundation material, sub-bases, base courses, pavements, behaviour of these materials under varying conditions of load, weather and temperature, drainage, maintenance. The evaluation and design of roadways using deflection data; the Benkelman Beam use and subsequent evaluation of materials; field procedures, compaction specification. Streets: classification, street geometry, widths, sections, drainage; service trench effects, street equipment, lighting, street use and public relations. Subdivision patterns, the street as dictated by land-use planning.

42.320 Building Structures

Reinforced-concrete beams; tension steel only; one-way and two-way slabs; compressive reinforcements; tee beams; axially and eccentrically loaded columns; simple footings and retaining walls; reinforcing detailing, schedule, and placement; design of forms.

42.406 Structural Design and Draughting

Portal and multi-story frames; wind analysis; shear and moment in arches; 3-pin, 2-pin, and fixed arch; suspension bridge. Shear flow; shear centre; torsion in beams; curved beams. Tension coefficients; space frames. Flat slabs; prestressed beams; ultimate load design of reinforced concrete. Experimental stress analysis, computer analysis, and discussion of advanced structural forms.

Problems and experiments in application of principles to structures.

42.407 Soil Mechanics and Foundations

More intensive study of specifically civil engineering applications; compaction and stabilization of soils; caisson foundations; sheet piling; cofferdams; tunnels and conduits; dams, foundation failures; earth dams; design of cuttings and embankments; highway pavements, airport pavements.

Laboratory tests, model experiments, and field trips to exploration and construction sites.

42.409 Public Services Engineering

Design of waterworks distribution systems; sprinkling and fire-protection effects; metering; services; rates and policies; pipe materials; trenching and backfilling; plans and records.

Design of sanitary and storm sewer systems and their outfalls; use of watercourses; pipe materials; trenching, bedding, and backfilling; services; rates, policies, and financing; plans and records.

Gas, power, and communications distribution problems and practices; public utilities use of the streets.

Garbage collection and disposal practices.

Oil lines, trolley cables, and railroads in streets; historical occurrence and suggested policies.

Street widths, street classifications, entries and driveways, typical underground sections and costs.

42.410 Codes and Specifications

A course in the practical use of English in defining requirements to ensure quality control in construction. A study of well-known traditional examples is included. The standpoints of designers, owners, contractors, builders, and governments will be discussed. The two principal approaches—method specification and performance specification—will be contrasted and evaluated for each type of construction activity discussed. The definition, elements, and " spirit " of a contract and common forms will be examined.

42.411 Costing and Estimating

Fundamentals of cost accounting; cost records; cost breakdown; unit costs; principles of quantity surveying; bill of materials; unit prices; methods of tendering; approximate and quick estimates; proportionate cost allowances for location, labour, and time.

Problems integrated with projects in other subjects. Field trips.

42.412 Bridge and Building Practice

Visiting lecturers will present practical problems and their solutions within the area of their specialty. Covering the fields of investigation, design, fabrication, and erection of bridges and building structures, job organization and control, project financing.

Site inspections will be arranged as an integral part of this course.

42.420 Building Structures

Combined bending and axial loads; eccentric columns in steel and timber; built-up sections in steel and timber; beam-column connections.

Restrained and continuous beams; strain energy; moment-area; moment distribution; portal and multi-story frames; steel and timber detailing and fabrication.

Discussion of ultimate load design, prestressed concrete, advanced structural forms, and experimental stress analysis.

ELECTRICAL AND ELECTRONICS

43.102, 43.202 Electrical Circuits

A theoretical and practical study of the behaviour of electrical circuits. Circuit elements, circuit components. Electrical parameters, units and relationships. Practices involved in the manufacture of electrical equipment. Characteristics of series, parallel, and combination circuits with direct and alternating currents. Circuit laws and theorems. Two-port circuit analysis—impedance, admittance, and hybrid circuit parameters. Electron tubes and solid-state devices. Application of circuit principles to simple power and electronic circuits.

43.132 Electrical Fundamentals

Electrical components and their behaviour in typical circuits. Electrical parameters, units and relationships. Characteristics of series, parallel, and combination circuits with direct and alternating currents.

43.202 *See* 43.102.

43.223, 43.323 Electronic Circuits

Review of current solid-state and vacuum tube devices, with the emphasis on solid-state. Basic circuits containing these devices. Choice of operating

point. Derivation and use of equivalent circuits. Load lines and their use in performance analysis. Amplifier configurations and classes. Interstage coupling networks and devices. Biasing and stability. Frequency response considerations. Feedback and its effects. Oscillation and oscillator circuits. Integrated circuits. Voltage and current regulating circuits. Basics of pulse technology, including non-sinusoidal waveform analysis. Time constants and analysis of RC and RL circuits. Diode and transistor clipping and clamping. Transistor as a switch. Rise time, fall time, and storage time of transistor switches.

43.232 Electronic Fundamentals

Circuit laws and theorems. Electron tubes and solid-state devices. Application of circuit principles to some electronic circuits such as amplifiers, oscillators, frequency discriminators, feed-back control networks, logic circuits, etc.

43.303 *Measurements, Electrical and Electronic*

A lecture and laboratory course on the principles and applications of electrical and electronic measuring instruments. Meter movements—principles of operation, construction, and characteristics. Instruments for the measurement of voltage, current, power, energy, resistance, impedance, frequency, etc. The cathode ray oscilloscope, principles and applications in the measurement of electrical parameters. Signal sources. Digital instruments. Instruments for the measurement of magnetic parameters. Techniques involved in measurement. Precautions to be observed in making measurements. Accuracy, repeatability, and traceability in measuring systems and techniques.

43.311, 43,411 *Electrical Equipment (Power Option)*

Theory, characteristics, and operation of alternating-current and direct-current machines and equipment involved in the generation and distribution of electric power, and in its conversion for use as other forms of energy. Generators, transformers, a.c. and d.c. motors and controls, rectifiers, regulators, high-voltage switch gear, low-voltage switch gear, heating devices, lighting equipment, and their application to use in industry and utilities. Economics of applications.

43.313 Circuit Analysis

A theory course on methods of analysing electrical circuits oriented for electrical power students. The course covers network theorems, two- and three-wire d.c. and a.c. distribution systems, three- and four-wire three-phase systems, phasor relationships, power factor, power factor correction, equivalent circuits, voltage regulation studies, short-circuit studies, the use of d.c. and a.c. network analysers.

43.321 Electrical Equipment (Electronics Option)

A course covering the principles and operation of the equipment involved in the generation, transmission, and distribution of electric power; its conversion to useful forms of energy by a.c. and d.c. motors, transformers, heating and lighting equipment; related control devices; applications in industry.

43.323 *See* 43.223.

43.324 Communications

Outline of typical radio systems. Common types of modulation. Analysis of amplitude modulated signals. Generation of amplitude modulated signals. Analysis of phase and frequency modulated signals. Generation of phase and frequency modulated signals. Single sideband (SSB) modulation. Comparison of SSB and AM systems. Generation of SSB signals. Balanced modulators. High-power SSB transmitters. Demodulation of SSB signals. Product detectors. Sideband reversal through heterodyne action. Power amplifier neutralization. Analysis and design of the common radio circuits. Tuned Class A RF amplifier. Single-tuned Class A mutual coupled RF amplifier. Double tuned Class A mutual coupled RF amplifier. Design criteria for transistor tuned amplifiers. Converters and mixers. Envelope detectors. Discriminators. Ratio detectors.

43.331 Electrical Equipment

Theory, characteristics, and operation of a.c. and d.c. machines, control and switching devices, and equipment used in plant power systems, heating devices, lighting, economics.

43.404 Servos and Control

Theory, principles, characteristics, and operation of servomechanisms and automatic control systems. Components used in these systems. Transmission of data. Industrial applications of automatic control systems.

43.411 *See* 43.311.

43.412 Industrial Electronics (Power Option)

Review of the theory and characteristics of electronic devices used in industrial applications. Rectifiers, saturable reactors, magnetic amplifiers, thyratrons, ignitions, silicon controlled rectifiers. The application of electronic principles and devices in measuring and controlling parameters of industrial processes, controlling industrial drives and equipment, and in the automation of processes. Transducers, amplifiers, photo-electric devices, timing circuits, counters, transistorized switching devices and logic circuits. Electronic regulators. Induction heating, welding control circuits. This course relates electronics to electrical equipment and their co-ordinated application in industry.

43.414 Power Systems

A study of electrical systems used in the generation, transmission, distribution, and use of electrical power. Topics to be covered include: the main features of steam — electric and hydro-electric generating stations, transmission-line characteristics, switching stations, load substations, equipment selection, station layouts, relay application and co-ordination; the planning and design of industrial plant and commercial building power distribution systems, power system operating problems and economics.

43.419 Special Projects and Tutorials (Power Option)

Topics of a broad nature are covered in order to relate all material previously covered, by its application to industrial situations and problems. Students also work individually on one or more projects, with teaching staff acting in an advisory or consulting basis, thus developing the student's ability to assume over-all responsibility for all phases of an assignment of an industrial nature.

43.422 Industrial Electronics (Electronics Option)

Special requirements of components for industrial circuits. Saturable reactors, thyratrons, ignitrons, solid-state rectifiers, silicon controlled rectifiers, the amplidyne. The magnetic amplifier. D.c. and a.c. timing circuits. Sequence timing. Phase control of thyratrons, ignitrons, and silicon controlled rectifiers. Sensing temperature, pressure, rate of flow, humidity, strain. Welding control circuits. Motor and generator control circuits. Position and side register circuits. Radio frequency heating. Application of oscillators and amplifiers to industrial circuits. Application of servo mechanisms to industrial circuits.

43.425 Pulse Circuits

Solid-state pulse generators—astable multivibrators, free-running blocking oscillators. Unijunction transistor pulse generators. Pulse shapers and pulse delay circuits—monostable multivibrator, triggered blocking oscillators. Counting circuits-bistable multivibrator, synchronized monostable multivibrator. Transistorized voltage ramp generators. Current ramp generators. Pulse delay lines.

43.427 Microwave Techniques

The distributed transmission-line. The general wave equations. The ideal lossless line. Travelling waves. Standing waves and standing wave ratio. Transmission-line impedance. Graphical representation of transmission-line characteristics. Smith chart. Impedance matching using the Smith chart. The coaxial slotted line. V.S.W.R. measurements. Impedance measurements. Wave guides. Wave guide cut-off frequency. Common rectangular wave guide modes. Coupling in and out of wave guide structures. Impedance matching elements. Wave guide tees, attenuators and terminations. Directional couplers. Detectors. Cavities. Wave meters. Active microwave devices.

43.428 Digital Techniques

Introduction to Digital Techniques. Number systems used in digital circuits. Codes and coding systems. Application of Boolean Algebra and Symbolic Logic to digital circuit analysis. AND/OR and NOT circuits. NOR and NAND circuits. Serial and parallel counting circuits. Decoding and encoding matrices. Shift registers and ring counters. Serial and parallel adding and subtracting circuits. Storage elements. Input and output elements. Error detection and error correction systems. Analysis of a complex digital system. Analog to digital, and digital to analog conversion methods. Applications of digital techniques to communications, radar, control, and automation systems.

43.429 Special Projects and Tutorials

This laboratory course develops in the students the ability to assume personal responsibility in the design, development, and testing of electronics equipment. Each student is assigned one or more projects to complete during the term. The students work in an environment which simulates as closely as possible the anticipated role of the graduate electronics technologist with the teaching staff acting in an advisory capacity on both individual and group bases.

43.441 Electronic Systems

A course dealing with complete systems used in various applications of electronics. Typical systems dealt with are related to radar, communications, television, aviation, navigation, etc. Lectures cover the principles of operation of the systems. The laboratory sessions enable the students to gain experience in testing, line-up, and servicing of electronic systems. Field trips to operational electronic systems and manufacturing plants give the students knowledge of industrial practices.

FOOD

44.101, 44.201 Food Technology

The composition of foods. Nutritional aspects. An introduction to the processes of canning, freezing, pasteurizing, dehydrating, smoking, brining, and fermenting. Experimental lots of food will be preserved by these methods during laboratory periods.

44.121, 44.221 Food Microbiology

The use and care of the microscope. The isolation of bacteria for purposes of differentiation and classification by morphological, cultural, and biochemical methods. The characteristics of yeasts and moulds. Microorganisms of importance in fresh and preserved foods. Food fermentations. Contamination and spoilage of foods and means of control.

44.201 *See* 44.101.

44.221 *See* 44.121.

44.301, 44.401 Food Technology

Detailed studies of specific food-manufacturing processes, including dairy-products manufacture, fruit and vegetable processing, jams and jellies, fish and meat products, edible fats and oils, food emulsions, processed potato products, dehydrated and freeze-dried foods, tea and coffee, spices, confections, and products of milling and baking. Characteristics of packaging materials, including flexible films, and how they meet the package requirements of various foods.

44.311, 44.411 Quality Control

Responsibilities and organization of a quality-control department in the food industry. Equipping a control laboratory. Methods of measuring and controlling quality factors, such as colour, texture, flavour, and consistency, in foods. Principles of statistical quality control. Federal and Provincial Government standards. Laboratory periods will provide practical experience in the scoring and grading of processed foods and in the use of various control instruments.

44.312, 44.412 Food Analysis

Chemistry of foods. Methods of preparing samples for chemical analysis. Objective analytical techniques used for general food analysis, for determinations on basic nutrients such as carbohydrates, fats, and proteins, and for specific food products and additives. The interpretation of analytical results as they pertain to food quality. Laboratory exercises will include classical techniques and more recent instrumental and chromatographic methods of analysis.

44.341 Mechanics of Machines

Basic mechanical principles. Power transmission, fluid mechanics, heat transfer, steam and its use in the food plant, materials of construction, corrosion, maintenance and lubrication. Whenever possible, food-industry equipment will be used in laboratory exercises.

44.401 *See* 44.301.

44.402 Process Analysis

This course is designed to acquaint the student with the more important production engineering aspects of food manufacturing. Basic processes will be considered along with plant layout and design, flow diagrams, materials handling, and production management techniques. Laboratory sessions will involve experimentation, demonstration, and problem-solving.

44.411 *See* 44.311.

44.412 *See* 44.312.

44.431 Sanitation

Organization of a sanitation programme in the food industry. The chemistry of cleaning. Properties of a good detergent. Types of cleaning compounds and formulation. Methods of disinfection and sterilization. Sanitary aspects of buildings and equipment. Safe water supply. Waste treatment and disposal. Effective insect and rodent control. Employee training in sanitary practices. Inspection techniques and laboratory tests.

FORESTRY

45.101, 45.201 General Forestry

Fundamental concepts of forestry, general history and importance of forestry in British Columbia and North America. Forest agencies, public and industrial. Botany, tree and plant identification and classification. Wood technology, structure and properties. Multiple-use aspects, including recreation, wildlife, fish, power, and grazing.

45.102, 45.202 Forest Mensuration

Methods of measurement of standing and felled timber. Direct measurement of tree diameters, heights, and ages. Use and construction of volume, stand, growth, and yield tables. Measurement of site index. Forest inventory techniques, compilation of forest data, elementary statistical analysis. Reproduction surveys. Cruising for quantity and quality. Log scaling and grading theory. Extensive field work in timber measurement and estimation.

45.106 Photo Interpretation

Practical use and application of aerial photography in forestry. Mapping topography and forest types. Introduction to photo interpretation, use of stereoscopes, scales, transfer equipment, and indices. Limitations to and use of photos in reconnaissance, planning, and inventory.

45.107, 45.207 Forest Utilization

An introduction to the harvesting and utilization of our forest crop. Survey of logging and lumbering practice. Laminated beam, plywood, round timber, composition board, pulp, and paper manufacture. Paper-converting operations. Integration in forest utilization. Field trips to demonstrate lecture material.

45.110, 45.210, 45.410 Fire Control

Historical review, principles of combustion, fire weather and its measurement. Factors influencing forest inflammability, fire danger, hazard, fuels. Fire behaviour, prevention, occurrence, and development. B.C. Forest Service and industrial pre-organization, detection. Fire control, reconnaissance by air and ground. Water and chemicals. Use of bulldozers, crew organization and fire camps, transportation and communication. Reports, mapping, personnel, first aid. Fire legislation. Special equipment. Recent advances.

45.201 *See* 45.101.

45.202 *See* 45.102.

45.205, 45.305 Logging

History and development of logging. Description of systems most commonly used on the B.C. Coast and Interior. Layout and construction of settings, roads, and landings. Pre-logging, salvage and thinning. Equipment developments. Logging plans. Camp location, construction and maintenance. Woods organization and safety. Contracts and costs.

45.207 *See* 45.107.

45.210 *See* 45.110.

45.302, 45.402 Forest Mensuration

Field application of cruising techniques. Office compilation and cruise report preparation. Volume and quality cruising for inventory and logging development. Preparation of forest maps. Familiarization with B.C. Forest Service cruising systems and maps. Timber-sale applications and examinations. Stump cruises.

Instruction in log scaling for Coastal and Interior operations. Scaling for woods records and inventory. Cubic- and board-foot log scales. Conversion factors and volume calculations.

45.308, 45.408 Roads and Transportation

Design of transportation plans to fit timber and terrain. Road specifications to suit production plans. Truck-road location, construction, and maintenance. Earth and rock work. Drainage, culverts, run-off control. Snow removal and winter roads. Small bridges, log dumps, booming grounds, river improvements, rafting and barging. Road costs. Rail transportation.

45.309, 45.409 Silviculture

Introduction to elementary silvics, silvicultural principles and systems and intermediate cuttings. Natural and artificial regeneration, including site preparation, brush control, planting, seeding, and care of nurseries. Planting surveys and crews, pruning, thinning. Systems of cutting and effects on future growth, stand composition and yield. Silvical characteristics of major B.C. species. Forest soils. Forest stand types and relation to logging planning. Regional silviculture—Coastal, Interior. Introduction to genetics and ecology, forest classification.

45.313 Forest Pathology

Elementary study of forest tree diseases in British Columbia. Relative importance of various groups of diseases—root rots, trunk rots, foliage diseases, etc. Effects on development and management of stands. Control of disease through silvicultural practices. Research projects.

45.316, 45.416 Forest Management

Principles of sustained yield, regulation of the cut, rotation, allowable cut, multiple use. Administration of Crown and private timber via timber sales, tree-farm licences, pulp harvesting areas, farm wood-lots. Inspections and supervision. Sloan Report. Forest Act. Logging cost appraisals based on field data. Stumpage appraisal: principles, methods and application of estimations of value of standing merchantable timber. Principles of forest valuation, immature forests, forest properties. Damage appraisal. Insurance.

45.402 *See* 45.302.

45.405 *See* 45.205.

45.408 *See* 45.308.

45.409 *See* 45.309.

45.410 *See* 45.110.

45.414 Forest Entomology

Forest insect problems in Canada and British Columbia. Recognition of damage in standing and felled timber. Major types of harmful insects. Effects on timber stands and forest products. Control measures.

45.416 *See* 45.316.

FOREST PRODUCTS

46.301, 46.401 Pulp and Paper Technology

History of pulp and paper making. The industry in Canada and the world. World fibre sources. Wood structure. Fibre morphology. Wood chemistry. Preparation of wood. Water treatment. Principles of pulping. Mechanical, semi-chemical, and chemical pulping. Fibreboard manufacture. Handling of unbleached pulp. Preparation of pulping chemicals. Chemical and heat recovery. Pulp bleaching. Preparation of bleaching chemicals. Drying and packaging of pulp. Pulp uses. Pulping by-products. Paper-making and paper-board manufacture. Paper converting. Microbiology of pulp and paper. Auxiliary mill equipment. Mill instrumentation. Materials of construction. Mill hazards and safety. Pulp and paper marketing and distribution. Possible future developments.

46.304, 46.404 Pulp and Paper Testing

Process chemicals evaluation and water quality. Process control tests, including wood and chip tests, pulping and bleaching liquor tests, pulp viscosity and bleachability, consistency, fibre and screening losses. Beater and freeness testing. Sheet-making. Physical tests, including basis weight, caliper, density, brightness, opacity, stiffness, absorbency, porosity, smoothness, dirt count, fibre classification. Chemical tests, including acidity, alkalinity, pH, alkali solubility, ash, resin, viscosity.

46.311, 46.411 Wood Properties

Wood anatomy in relation to physical properties and quality. Wood identification. Wood defects. Ornamental features. Physical and mechanical properties of woods. Fuel value. Chemical composition and identification. Properties and uses of important native species. Important foreign woods.

46.314, 46.414 Wood Processing

Log preparation, bucking, sorting, barking. Lumber and plywood manufacture. Chipping, wood seasoning, preservation. Fire retardants. Wood and adhesives, laminated woods. Edge and end gluing. Composition boards. Round timbers and modified wood products. Millwork.

46.317, 46.417 Quality Control and Marketing

Grades and sizes. Product development, packaging, shipping, merchandising. Inventory control. Export and local market requirements. Research developments.

46.401 *See* 46.301.

46.404 *See* 46.304.

46.407 Wood Chemistry

Structure of the major wood components: extractives, lignin hemicellulose and cellulose and their distribution in the wood structure. Chemistry of wood itself. Chemistry of the wood components, particularly as related to commercial pulping processes. The chemistry of cellulose derivatives such as rayon, cellophane, tire cord, acetate, nitrate. The chemistry of bark.

46.411 *See* 46.311.

46.414 *See* 46.314.

46.417 *See* 46.317.

NATURAL GAS AND PETROLEUM

47.221 Distribution and Utilization (Gas)

City gas stations; regulation and odourization; high, medium, and low pressure distribution systems; network analysis; services; service regulators; meters; combustion stoichiometry; furnaces, boilers; installation codes; industrial and power utilization; corrosion control; peak shaving; storage.

47.311 Gas and Oil, Production and Transmission

Petroleum geology; reservoirs; exploration; well drilling; field production and treatment; conservation; gathering and transmission systems; pipeline construction and maintenance; corrosion protection; compressor and pumping stations; flow computations; economics of design; measurement; laws and regulations.

47.341, 47.441 Unit Operations

Piping, pipe fittings and valves, fluid flow in pipes and channels. Pumps, compressors, turbines, steam and internal-combustion engines, electric motors. Principles and application of equipment for distillation, extraction, gas absorption, heat exchange, filtration, drying, size reduction, and separation, refrigeration, agitation, evaporation, industrial safety.

47.431 Refining and Utilization (Oil)

Crude oil, distillation, cracking, thermal and catylitic, reforming, hydrogenation; oil products, product testing, storage, loading, combustion stoichiometry; oil and gas engines, oil burners.

47.441 *See* 47.431.

INSTRUMENTATION AND CONTROL

48.110 Instruments

Measurement as the basis of control. Characteristics and theory of operation for first-order instruments used in the measurement of pressure and temperature. Laboratory work involving commercial examples to illustrate principles of operation of pressure- and temperature-measuring equipment. Methods of calibration and installation.

48.120 Instrument Shop Practice

Precision machining and measurement of small items. Fabrication of linkages and typical components. Heat treatment, including welding and soldering. Tube-bending and pipe-fitting.

48.210 Instruments

Principles of operation, commercial examples and laboratory work with flow-measuring and level-measuring devices for fluids and solids. Theory of fluid mechanics. Design calculations of flow-measuring devices. Electrical bridge application to measuring instruments.

48.300 Advanced Measurements

Measurement and control of density; viscosity moisture content; gas analysis; electrolytic conductivity; smoke density and turbidity; optical and radiation pyrometry.

48.301 Instrumentation

Primarily an orientation course for students in other technologies. Principles of mechanisms. Instrument classification. Measurement of pressure, level, and temperature. Calibration techniques. Laboratory demonstration of the main types of instrument involved.

48.310 Process Control

History of automatic control. Self-regulation. Pressure and level regulators. Proportional action and offset. Dynamic response. Modern control valves and valve characteristics. Pilot-operated regulators Valve positioners. Two-position control. Constant speed floating control. Control involving proportional, reset, and rate action (open loop). Pneumatic controllers and components. The construction and operation of analog computers.

48.320 Production Control

Instrumentation and control equipment used in measurement and regulation of physical shape and quantity of manufactured products. Cam controller programming of repetitive machines. Component counting on conveyors.

48.330 Servomechanisms

Theory, principles, and application of servomechanism in control systems. System response to command changes. Comparison of open loop versus closed loop systems.

48.400 Advanced Measurements

Measurement and control of speed; vibration, displacement; weight, pH, and O.R.P.; dissolved oxygen; gas chromatography, analysis by I.R. absorption.

48.401 Instrumentation

Continuation of the orientation course. Flow measurement. Measurement of miscellaneous reactions; e.g., pH, reduced oxygen, conductivity, etc. Principles of process control. On-off control and floating control. Control involving proportional, reset, and rate action. Emphasis is on laboratory demonstration with a wide range of instruments.

48.410 Process Control

Electronic controllers and components. Step analysis. Frequency response analysis. Solutions by math. Solutions by analog computer. Control systems—averaging, cascade, ratioing, etc. Industrial applications.

48.420 Telemetering

Signal transmission over long distances. Envolving, sending, receiving, and decoding of information. Remote control.

48.430 Electronics for Instruments

The application of standard electrical and electronic circuits for the particular requirements of process measuring instruments. D.c. to a.c. converters; voltage and power amplifiers; a.c. and d.c. bridges.

48.440 Economics and Safety

Introduction to Engineering Economy. Supply and demand. Law of Diminishing Returns. Interest and depreciation. Capital and operating costs. Break-even analysis. Economics and safety. Codes and regulations. Safety equipment. Alarm systems.

MECHANICAL

49.101, 49.201 Draughting

Orthographic and isometric projection; lettering; technical sketching; sections; conventional practices; dimensioning; threads and fasteners; working drawings; interpretation of architectural, structural, electrical, and piping drawings; intersections and developments; commercial reproduction techniques.

49.105 Mechanics

Vectors; force systems; graphical representations and solutions; analysis of practical problems involving static and dynamic loads; friction and acceleration forces; inertia; torque; work; power.

49.165, 49.265 Shopwork

Practical experience in the use and application of basic metal-cutting machine tools—engine lathe, drill press, shaper, milling machine, power saw, planer, and precision grinder; layout and bench work; precision measuring; fits and tolerances; heat treatment; tool sharpening; spark testing.

49.166 Shop Practice

A basic course designed to familiarize the student with shop tools and equipment and with shop terminology and established standards of workmanship. Demonstration and practice by the student are carried out to provide a good understanding of the subject.

49.168, 49.268, 49.368, 49.468 Machine Tool Theory

Study of modern machine tools, their history and development, as well as the range and application of each in the modern shop and industry.

49.201 *See* 49.101.

49.206 Engineering Concepts

Study of stresses, strains, and deflections resulting from action of tensile, compressive shear, and torsion forces on simple types of structural and machine elements. Consideration of beams, columns, shafts, thin-walled cylinders, riveted and welded joints. Laboratory testing of engineering materials and common machine elements.

49.210 Strength of Materials

Study of stresses, strains, and deflections resulting from action of tensile, compressive, shear, and torsion forces on simple types of structural and machine elements. Consideration of beams, columns, shafts, thin-walled cylinders, riveted and welded joints. Laboratory testing of engineering materials and common machine elements.

49.265 *See* 49.165.

49.266 *See* 49.166.

49.267 Shopwork

Practical experience in the use and application of basic metal-cutting machine tools—engine lathe, drill press, shaper, milling machine, power-saw, planer, and precision grinder; layout and bench work; precision measuring; fits and tolerances; heat treatment.

49.268 *See* 49.168.

49.301 Draughting

Further development of topics covered in 49.101 and 49.201. Piping drawings; welding drawings, limits and fits; finishes; complex surface developments.

49.312, 49.412 Machine Design

Basic principles of machine design, including application of fundamentals of mechanics, strength of materials, draughting techniques, and physical properties of materials toward creation of complete machines for economical production and efficient operation. Incorporation of practical experience gained in machine-shop periods into practical designs will be stressed. Study of common machine elements, including beams, columns, shafts, gears, belts, pulleys, couplings, and screws, and incorporation of these into more complex assemblies.

49.315 Fluid Mechanics

Principles of hydrostatics, including properties of fluids; pressure measurement; forces on submerged surfaces; fundamentals of fluid flow; flow through pipes, nozzles, and orifices; streamline and turbulent flow; flow measurement; dimensional analysis. Laboratory tests to verify lecture theory.

49.320 Estimating

Cost estimating as it relates to single projects, manufacturing processes, and tooling, including materials, direct and indirect labour, allowances, wastage, etc. Problem sessions will be devoted to development of typical cost analyses encountered in industry.

49.325, 49.425 Thermodynamics

Fundamentals of heat; properties of gases and vapours; use of steam tables and charts; simple heat engines; steam engines and turbines; internal-combustion engines; gas turbines; steam power plants; air compressors; Carnot and other gas cycles; heat transfer; laws of thermodynamics. Laboratory experiments include tests on steam and gas turbines, dual-fuel and gasoline engines, air compressors, boilers, and related equipment.

49.365, 49.465 Shopwork

Continuation of Shopwork 49.165 and 49.265 with further experience on machine tools, including boring mill, jig borer, tool and cutter grinders, turret lathe, key seater, die sinker, and punch press; hardening and tempering; use of fine measuring tools.

49.368 *See* 49.168.

49.412 *See* 49.312.

49.425 *See* 49.325.

49.435 Hydraulic and Pneumatic Equipment

Study of the basic components of hydraulic and pneumatic systems and how they are combined to build up various circuits. The uses of hydraulics and pneumatics for both power transmission and control purposes are covered. Laboratory work includes experiments and tests on various types of equipment used in industry.

49.440 Refrigeration and Air Conditioning

Principles of refrigeration; properties of refrigerants; coefficients of performance; refrigerant load calculations; commercially available equipment; heat transmission and losses; psychrometric properties of air; types of building heating systems; air flow measurement; duct design; building cooling and heating loads. Laboratory periods devoted to design problems and testing of equipment systems.

49.445 Manufacturing Processes

Study of modern manufacturing processes, including the machines, materials, methods, and practices used in the mechanical industries; casting; welding; hot and cold forming; extruding; forging; die casting; stamping; and pressing. Course content will be related to material covered in Engineering Materials and to training given in Shopwork 49.165 to 49.465. Field trips to appropriate local industries.

49.450 Production Engineering

Study of the problems and techniques of materials handling, plant layout, production planning, and quality control; relationship between good plant layout, efficient materials handling, and operating effectiveness; site evaluation; floor layouts; product and process layout schemes; materials-handling equipment; flow diagrams; use of templates and models.

Factors involved in preparation for manufacturing—process and operation selection, product design, equipment planning, balancing of productive units; requirements of and techniques used in quality control in manufacturing operation.

Laboratory sessions include application of theory and techniques to solution of simulated plant and production problems.

49.455 Tool Design

Study of tool design as related to manufacturing methods and requirements; tooling for production and gauging; standard tooling components and devices; consideration of drill jigs, press tools, punches, dies, and special devices.

49.460 Instrumentation and Controls

Methods of and devices for measurement of temperature, pressure, flow, level, weight, viscosity, speed, r.p.m., voltage, current, etc.; application of instruments and controls to equipment and processes; introduction to concepts of automatic control.

Laboratory periods to test, operate, and evaluate various common types of industrial devices in test set-ups and in actual installations on operating boilers and other Institute equipment.

49.465 *See* 49.365.

49.468 *See* 49.168.

49.470 Mechanical Equipment

A study of mechanical equipment relating to the development, transmission, application, and control of power with particular reference to the wood-processing industries. References to types of prime movers, speed conversions, drives, bearings, hydraulic and pneumatic systems will be included.

MINING

50.101, 50.201 Geology

Definition, basic concepts, earth's crust, geologic time; atomic structure of minerals, crystal forms and symmetry systems; properties of common minerals; sedimentary rock types, clastic and chemical sedimentaries; igneous rock types, classification; deformation of earth's crust, folds, faults; metamorphic rocks; weathering, erosion, and glaciation; economic geology, mineral fuels, non-metallics, ore deposits and their controls; geological history, pre-cambrian, paleozoic, mesozoic, tertiary, pleistocene; geologic maps.

50.102, 50.202 Mining

Nature of the mineral industries, search for economic mineral deposits; economics of mining, potential reserves, "average grade," mineral prices, costs; exploration of a mineral deposit, sampling campaigns, weighted arithmetic mean, confidence limit and reliability of an average; acquisition of title, the claim system; exploitation of deposits, choice between surface and underground methods, development patterns; planned systematic extraction, terminology of mine development; classification of mining methods, description of common methods.

50.201 *See* 50.101.

50.202 *See* 50.102.

50.301 Geology—Structural

Brief review of mechanical principles of rock deformation and of the primary structures of sedimentary, igneous, and metamorphic rocks. The origin, nature, and classification of joints, folds, and faults, with emphasis on their relation to mineral resources.

Laboratory work includes examination of specimens, methods of recording structural data, mapping and solution of structural problems, with emphasis on economic aspects.

50.302, 50.402 Mining—Operation

Mining economics, total cost components, selection of equipment, utilization of equipment, break-even rate; breaking ground; ground support; ore and waste removal, chutes and handling systems; development drives, rounds, cycles, control; examples of mining practice; drainage, water sources, water removal or isolation; ventilation; accident prevention, occupational hazards and their control; Metalliferous Mines Regulation Act, equivalent regulations; production management, organization, control techniques.

50.303, 50.403 Mining—Equipment

Underground services: compressed air, power, water, ventilation. Compressed-air equipment, use and maintenance. Hoisting systems and their maintenance. Power generation and distribution; d.c. and a.c. motors and generators for mine service; transformers and rectifiers. Mechanical design of gearing, V-belt drives, bearings, shafting, etc., for common mine service.

50.304, 50.404 Mineral Processing

Purpose of mineral processing. Essential operations: comminution, concentration, extraction. Crushing: forces available; product size distribution, reduction range; types of crushers. Screening: efficiency and capacity; screen types; closed-circuit calculations; crushing and screening flowsheets. Grinding: attrition mills, high-energy mills, tumbling mills; energy input; grinding media; liner forms and their effect. Classification: free and hindered-settling concepts; cyclones, hydraulic classifiers, mechanical classifiers; closed-circuit classification.

Concentration: hand sorting, gravity concentration, heavy media; gravity flowsheets. Flotation: collection, activation, depression, frothing; flotation machines; flotation flowsheets. Electrical concentration. Magnetic concentration. Filtration, drying, pelletizing.

Extraction processes: roasting, cyanidation, cementation, ion exchange, differential solution, autoclave leaching, amalgamation.

50.401 Geology—Mineral Deposits

The terminology, classification, manner of occurrence, distribution, and economics of mineral resources, with emphasis on typical Canadian occurrences. Ways of recognizing, discovering, and developing mineral deposits.

Laboratory work will illustrate and develop techniques in: megascopic study and identification of hand specimens; valuation of mineral deposits.

Field trips will be correlated with all classroom work in geology.

50.402 *See* 50.302.

50.403 *See* 50.303.

50.404 *See* 50.304.

SURVEYING

51.101, 51.201 Surveying

Introduction, types of survey; fundamental principles, accuracy and precision, errors and mistakes; measurement of distance, direction and elevation, calculation of latitude and departure, areas and volumes; earthworks and route surveys; horizontal, vertical, and transitional curves; use of plane tables, levels, compasses, transits, theodolites, chains, and calculating machines; note-keeping and plotting of records; care, maintenance, and adjustments of equipment.

51.102, 51.202 Surveying

Fundamental concepts of surveying: measurement of distances, use of compasses, transits, plane tables, levels, chains, stadia, and subtense bar; route survey and earthwork, site surveys, calculations relating to traverses, triangulation, areas, and volumes; obtaining, recording, and plotting topographic detail; care, maintenance, and adjustment of equipment.

51.103 Natural Science

Study of the forest flora of British Columbia; biotic zones, their boundaries, altitude, climate, and natural flora; the characteristics of native trees, identifying features and common uses. Elementary geology, including the study of rocks and minerals; geologic structures, general location and uses of common ores; soil classification and location.

51.201 *See* 51.101.

51.202 *See* 51.102.

51.301, 51.401 Surveying

Application of survey methods to construction surveys, topographic surveys, hydrographic surveys, and legal surveys; triangulation and trilateration; base-line measurement, use of electronic measuring devices; re-establishment of section and lot corners; subdivision of land; surveys under the *Land Act, Mineral Act, Highways Act, Special Surveys Act,* and *Petroleum and Natural Gas Act;* calculation of problems of closure, areas circular curves, transitional curves, terminal curves, and the conversion of geodetic co-ordinates to geographic co-ordinates; adjustment of elevations, adjustment of figures, reliability of observations, and rejection of observation.

51.302 Description for Deeds

Purpose and characteristics; descriptions; systems of survey, township system and district lot system, the preamble; the correct use of the words "more or less"; the importance of a good "point of commencement"; descriptions by adjoiners, description by aliquot parts, descriptions by metes and bounds, descriptions by exceptions, descriptions of rights-of-way by means of centre line; plans to accompany descriptions; Land Registry Office procedure; descriptions pertaining to Acts of the Legislature.

51.303 Draughting

Application of draughting fundamentals to preparation of plans for preliminary plans, construction plans, "as built" plans, subdivision plans, highway and other right-of-way plans, posting plans, and plans and field-notes under the *Land Act* and *Mineral Act* in accordance with the General

Survey Instructions to British Columbia Land Surveyors issued by the Surveyor-General of British Columbia.

51.304, 51.404 Surveying for Civil and Structural Technology

Application of survey methods to construction surveys, topographic surveys, and hydrographic surveys; triangulation and trilateration; base-line measurement, use of electronic measuring devices; route surveys, including preliminary profile and cross-sections, calculation of quantities and volumes, and plan preparation; site surveys, including horizontal and vertical control; bench-mark levelling and adjusting of nets; calculation of areas, volumes, closure, circular curves, transitional curves, and vertical curves; elementary photogrammetry applied to planning, site surveys, route surveys, grades, and quantities.

51.305, 51.405 Surveying for Mining Technology (Mining Option)

Application of survey methods to underground surveying; definitions of mining terms; illumination of stations; use of mining transits, auxiliary telescopes; connecting surface and underground surveys, transferring azimuth to underground surveys, transferring elevations to underground surveys; location of property boundaries underground; location of tunnels, control and alignment, determining quantities; note-keeping and plotting of records; computation of closures, areas, and volumes; elementary astronomy, derivation of meridian; elementary photogrammetry applied to mining.

51.306, 51.406 Astronomy

Introduction to practical astronomy; solid geometry and spherical trigonometry; the celestial sphere; the astronomical triangle; universal time, mean solar time, siderial time; the ephemeris and star almanacs; instruments used in solar and stellar observations; star identification; observations for latitude; observations for time and longitude; observations for azimuth.

51.307, 51.407 Photogrammetry

Introduction to photogrammetry; horizontal photographs, aerial photographs; cameras; flight planning for vertical photography; determination of scale; mapping from aerial photos; mosaics, use and method of construction; principle of stereo-vision; determination of heights from aerial photos; photo interpretation; route reconnaissance; radial-line plotting; oblique photos; plotting machines.

51.401 *See* 51.301.

51.404 *See* 51.304.

51.405 *See* 51.305.

51.406 *See* 51.306.

51.407 *See* 51.307.

MEDICAL LABORATORY

80.101 Medical Laboratory Workshop

An introduction to procedures and principles of operation and maintenance of precision instruments and equipment used in the clinical laboratory; laboratory mathematics, genetics, anatomy and physiology, metabolism, organic chemistry, and ethics.

80.102 Histology

The morphology of human cells, tissues, and organs. Emphasis is placed on the preparation of tissues for microscopic examination; methods of fixation, embedding, sectioning, staining, and mounting.

80.103, 80.203 Medical Bacteriology and Immunology

Classification, morphological identification, and physiology of bacteria, fungi, viruses, and parasites, with emphasis on the human pathogens and their relationship to disease. Laboratory preparation of specimens and media; sterilization techniques and culturing methods. An introduction to immunology is included. Serological identification of bacteria and antibodies, with emphasis on the public health aspects. The Department of National Health and Welfare approved methods are employed. Milk and water bacteriology; packaging and shipment of laboratory specimens.

80.105, 80.205 Hæmatology

The study of the composition of blood and blood-forming tissues, with emphasis on the cellular constituents and coagulation mechanism, both normal and abnormal.

80.107, 80.207 Clinical Chemistry

The study of the structure, properties, reactions, and metabolism of fats, carbohydrates, and proteins; analysis of blood, urine, and other body fluids, with emphasis placed on the chemical principles, calculations, and precautions involved.

80.203 *See* 80.103.

80.205 *See* 80.105.

80.206 Blood Banking

The theories of antigen-antibody reactions with detailed study of the important blood-group systems encountered in cross-matching; methods of collection, storage, and precautions employed in blood transfusion services.

80.207 *See* 80.107.

MEDICAL RADIOGRAPHY

81.001 Anatomy and Physiology

Brief outline of embryology; origin and development of the structure of the human body; general summary of human anatomy; origin and meaning of anatomical terms; surface anatomy and landmarks for radiographic positioning. Special reference is made to the skeletal, muscular, digestive, respiratory, circulatory, urogenital, lymphatic, nervous, and endocrine systems.

81.002 The Physics of Medical Radiography

The elements of electricity and modern physics with an emphasis of those aspects of these topics related to medical radiography. Topics include such matters as the structure of matter, static electricity, d.c. electricity, magnetism and electromagnetic effects, pulsating and alternating currents, X-ray and valve tubes, X-ray circuitry, the production and nature of X-rays, their interaction with matter, dosage and dosimetry, X-ray protection, radioactivity.

81.003 Radiographic Techniques

The study of the prime factors in radiographic techniques, technical terms, and conditions influencing the choice of factors. Film identification systems used. The radiographic techniques for individual systems, including radiography of bones, glands, thoracic viscera, abdominal and pelvic viscera, digestive organs, biliary organs, urinary organs, and foreign bodies. Use of mobile radiographic equipment; special techniques for operating-room, pædiatric, soft tissue, high voltage, and contrast media radiography. Techniques for special examinations.

81.004 X-ray Apparatus

Study of the source and distribution of electric-power supply, X-ray transformers and circuitry, the X-ray tube, instruments and controls. Accessory radiographic equipment, including grids, cones, filters, and immobilizing devices. Stereoscopy, spot film devices and special apparatus for body section radiography, image amplification, photofluorography and cineradiography.

81.005 Radiobiology and Protection

The study of ionizing radiation and its biological effects on normal tissues; its local, systemic, and genetic effects.

The study of the maximum permissible radiation exposures to man. The extent of radiation hazards; the source of radiation hazards and means of protection. Radiation monitoring. Electrical hazards.

The basic principles of radiation therapy in medical treatment.

81.006 Related Radiomedical Srudies

Consideration of the following subjects with special reference to their relation to medical radiography:

(*a*) **Radiographic Photography.**—The fundamentals of the photographic process. The physical facilities of the X-ray darkroom. X-ray film and paper, intensifying screens, developers and development, fixers and fixing, rinsing, washing, and drying. Processing equipment. The preparation of photographic solutions, the radiographic image, faults in roentgenograms.

(*b*) **Departmental Administration.**—Definition of ethics. Relationship with radiologist, fellow technicians, patients, and hospital personnel. Confidential nature of medical information. Ownership and medicolegal aspects of handling radiographs. Personal appearance and general deportment. Instruction in the internal organization of a radiographic department. Handling of requisitions and patient film reports; diagnostic index. Marking, filing, and disposal of films. Procedure for admission of patients. Essentials of a business letter; completion of monthly and annual departmental reports, and general office procedure.

(*c*) **History and Radiography.**—The history of the development of radiography. The development of radiography and of the radiological tech-

nician and technical societies. Explanation and comparison of the profession of medical X-ray technology to the profession of radiology. Orientation of the general conduct of radiological departments and hospitals.

(*d*) **Nursing Essentials.**—Orientation of the technician to other hospital services; admission of patient, technique of moving, lifting or transferring patient; elementary handling of emergency patients and patient under anæsthesia, preparation of patient for radiographic procedures.

(*e*) **Pathology.***—The study of the common pathological conditions of the various systems of the human body which are of significance to radiology.

(*f*) **Bacteriology.***—Outline of bacteriology showing the classifications and properties of micro-organisms, with particular reference to common bacteria of medical importance. Means of infection; reaction of the body to infection; natural defences against infection; immunity. Common viral and parasitic infections.

(*g*) **Pharmacology.***—Definition of pharmaceutical terms and abbreviations; sources of drugs; systems of weights and measures; solutions; preparation of doses and methods of administration of medicine; action of drugs and fundamentals of toxicology.

* Formal examinations are not conducted in these subjects.

BUSINESS MANAGEMENT

90.103 Business Mathematics

A review of basic mathematics followed by fundamentals of financial mathematics, including simple and compound interest, notes, drafts, annuities, sinking funds, and depreciation. Such essentials of retail mathematics as mark-up, mark-down, and stock turnover.

90.110 Problems Laboratory

An introductory course to initiate the student into the application of known theory. The problems given will be in the areas of business and engineering and will mostly involve mathematics.

90.131 Management in Industry

An orientation in the nature of business in the private enterprise system, embracing forms of business ownership and organization, management, leadership, and business elements of production.

90.135, 90.235 Economics

A one-year two-term approach to economics, with the aim of furthering an understanding of the organization and operation of our economic environment. The organization for production and distribution of wealth, determinants of prices and costs, and of income and employment, money and banking, the role of government in business and international trade; analysis of supply and demand, national accounts and business cycles; fixed, variable, and marginal costs; and analysis of the business firm under varying conditions.

90.140, 90.240 Accounting

The principles and techniques of a complete accounting cycle covering assets, liabilities, and owners' equity; basic accounting procedures; changes in owners' equity; closing the books; adjustments for accrued revenue;

accrued expense and for revenue and cost apportionments. The construction of working papers and financial statements including merchandise operations. Accounting for proprietorships, partnerships, and limited companies. Procedures and principles applicable to cash, investments, receivables, inventory, fixed assets, and liabilities. Accounting for manufacturing operations and basic cost accounting techniques. The analysis of financial data for management including sources and uses of working capital, cash flow statements and cash forecasting, and departmental and branch operations. Accounting aids to management, budgeting and profit planning. Consolidated statements. Canadian tax structure and Federal-Provincial tax arrangements. Income tax. All students are required to complete a practise set during the second term.

90.150 Introduction to Data Processing

An introduction to the principles and application of data-processing equipment in business and industry. A study of manual, electric, and electronic machines, including unit record equipment and an introduction to electronic computers.

90.170, 90.270 Marketing

An introduction to the marketing environment and marketing institutions; detailed study of the basic marketing functions, market research, product planning, selection of trade channels, merchandising, advertising and sales promotion, salesmanship. Emphasis on marketing of industrial as well as consumer goods.

90.182 Office Systems and Equipment

A review of office systems, facilities, and layout. Development of systems, techniques, and methods. An introduction to the functions and operation of commonly used office equipment.

90.190 Work Study

The application of analytical methods and critical examination in the systematic solution of design and production problems. The techniques of selection, measurement, evaluation, and development preparatory to work improvement.

90.204 Business Statistics

The practical application of statistics to business problems. Includes the collection and presentation of statistical data, frequency distributions, averages, index numbers, probability, theory of games, time series, linear correlations, reliability, and sampling.

90.210 Applied Programming

Instruction will be given in Fortram programming, which will then be used by the student in solving problems in engineering and business.

90.230 Business (for Engineering and Process Technologies)

Designed to give students enrolled in the engineering and processing technologies a basic appreciation of the complex world of business both from an economic and from an organizational point of view.

90.231 *See* 90.131.

90.232 Administrative Practices

A study to give the student an introductory insight into the basic nature of business problems and into the administrative processes involved in handling them. Problems in all of the several business areas will be examined, with emphasis on the personnel management aspects of these fields. Study and discussion will be undertaken of actual business situations selected to illustrate typical problems met in industry requiring managerial analysis, decision, and action.

90.235 *See* 90.135.

90.240 *See* 90.140.

90.245 Credit and Collections

Study of various types of credit and their use by retail businesses, commercial enterprises, and consumers. Includes sources of information, credit policy and control, and collection techniques.

90.250, 90.350, 90.450 Computer Programming

A detailed study of the organization, method of operation, and capabilities of electronic computers. The student will perform numerous programming exercises and case studies using the I.B.M. 1620 machine. Machine language, symbolic languages, generators, monitors, programming for tape and disk files will be included.

90.252 Unit Record Equipment

Practical training in the use and wiring of the standard unit record equipment, including sorter, collator, 407 accounting machine, reproducing punch and interpreter.

90.260 Basic Law for Broadcasting

(Open to Broadcasting (Production Option) students only.)

Definitions, sources, and principles of law relating to broadcasting, including a survey of the basic concepts of contract, tort, property, and business associations, with special attention to the subject of defamation.

90.270 *See* 90.170.

90.275 Salesmanship

Psychology of selling. Qualities of the effective salesman and essential sales traits, practical problems of locating and qualifying buyers, planning sales presentations, securing sales interviews, opening sales presentations, demonstrating, meeting objections, and closing sales.

90.296 Systems and Procedures

An introduction to systems and procedures in the office and warehouse. Consideration of practical business applications of major systems, such as billing, sales analysis, accounts receivable, and inventory control. Introduction to systems design, data processing, communication systems, and records management.

90.303, 90.403 Mathematical Analysis

A study of mathematical principles and methods having particular relevance to data-processing machines and application, including number sys-

tems, logic, Boolean algebra, linear equations, numerical methods, random numbers, and introduction to calculus.

90.310, 90.410 Business Engineering Problems

This course will aim at collating the knowledge gained in the other subjects in the programme. Emphasis will be on the application of this knowledge to the solution of industrial problems. The lecture series will cover techniques and will explore some methods used in business and engineering to solve problems in such areas as scheduling, material handling, inventory management, estimating, and transportation. In some cases, students may be required to do basic research in order to locate necessary information.

90.312, 90.412 Industrial Organization and Operations

Study of the various departments of a business enterprise, their objectives, functions, and relationship to each other in a systems sense. These will include sales, purchasing, engineering, production, product research, personnel, accounting, administrative services.

90.322 Human Relations

Study of the human elements in the operation of all enterprise; the nature of individual behaviour, interaction between individuals and organizations, group dynamics, and leadership.

90.332, 90.432 Estate Management

The real-estate function: economic characteristics of urban real-estate market; city growth and development; locational factors influencing the determination of land use and ownership. Practical aspects of the syllabus will include studies of the function of the real-estate broker and salesman; institutional lenders and the mortgage market; building construction and property development; land law and estates and interest in land.

90.333 Industrial Processes

A special course designed to familiarize students with the principal extractive, process, and manufacturing industries in the Pacific Northwest.

90.341, 90.441 Cost and Managerial Accounting

The accountant's role in the organization. Major purposes of cost accounting. Cost-volume-profit relationships. Standard costs and budgets. Responsibility accounting. Accounting systems and internal control. Costs for special decisions and long-range planning.

90.342 Retail Merchandise Accounting

Departmental, branch, and agency accounting systems. Consumer credit, instalment sales and consignment sales procedures. A comprehensive study of the solution of the mathematical problems of retail merchandising; i.e., profit calculation, mark-up, retail prices, price policies and lines, markdowns, inventory, expenses, and budgeting.

90.346, 90.446 Auditing

Basic auditing procedures. Features of the internal control system. The audit programme. Statutory audits, government audits, internal audits. The audit routine as applied to cash, inventory, accounts receivable and sales,

fixed and other assets, accounts payable and purchases, income and other taxes and expenses. Specialized audit routines.

90.347, 90.447 Financial Accounting

Review of accounting procedures, the accounting cycle, and the preparation of financial statements. Net income concepts, capital stock, surplus and dividends, accounting principles, cash receivables, inventories, investments, fixed assets, liabilities and reserves, analysis of working capital, application of funds. Statement from incomplete records, reorganization schemes, price level impact on financial statements.

90.350 *See* 90.250.

90.351 Scientific Computer Programming

An introduction to the principles and technical applications of digital electronic computers in industry. Students will use the computer to solve a problem in their own technological field.

90.360, 90.460 Business Law

A study of legal rules and principles which guide decisions involving the law of contracts (including the *Sale of Goods Act*), negotiable instruments (*Bills of Exchange Act*), agency partnership (*Partnership Act*), company law (British Columbia *Companies Act*), and employment.

90.361, 90.461 Business Finance

An investigation of different methods of raising funds for new and existing businesses, corporate and non-corporate. Cost and feasibility of new capital expenditures. Business risk and uncertainty. Analysis of the importance of financial institutions. Business promotion. Security analysis. Capital budgeting. Decision-making analysis. Surplus, dividend, and reserve policy. Business failure.

90.371, 90.471 Marketing Institutions

Investigation of marketing agents, wholesalers, retailers, co-operatives, and research agencies, as they relate to the distribution of goods and services. Includes consideration of current developments and trends in both wholesaling and retailing.

90.372, 90.472 Merchandising

Principles of buying and selling and merchandise management; sources of merchandise information and their application, manufacturing, wholesaling and retailing, stock control, location and layout, financing, pricing, buying organizations, techniques of merchandise selection, branding, buying plans and buying controls.

90.373, 90.473 Advertising and Sales Promotion

Introduction to advertising and sales promotion. Psychology of advertising, preparation of copy, layout, media selection, strategy, and campaign planning. Organization for sales promotion.

90.376 Sales Management

General principles of sales management. Selection training and supervision of the sales force. Sales planning, organization of territories. Sales control and analysis, evaluation of salesmen's performance.

90.381 Communication Systems

Study of the physical methods of communication, including mail, telegraph, telephone, radio, television, with special emphasis on data communication.

90.396 Data Processing Applications

A study of the application of data-processing principles, including accounting functions, statistical reports, production control, and installation management.

90.403 *See* 90.303.

90.404 Applied Statistics

An extension of 90.204. The computer will be used as a tool to perform the more extensive calculations. Some new topics will be introduced, including forecasting, regression analysis, and linear programming.

90.410 *See* 90.310.

90.412 *See* 90.312.

90.415 Electrical and Mechanical Power Devices

This course will investigate various types of electric motors, generators, gasoline and diesel engines, and gas and steam turbines, with particular emphasis on the operating characteristics, their applications, and the economics of each.

90.416 Measurement and Control Devices

Many industries are using devices to regulate and measure processes, and the importance of these devices is increasing rapidly. This course will introduce the student to the concepts, application, and costs and some typical units.

90.424 Personnel Administration

A sound introduction to the fundamentals of personnel management, including personnel procedures, tools and records, job description, recruiting, interviewing, testing, selection, orientation, training, wage and salary administration, promotion and transfers, benefits, and morale.

90.434 Managerial Policy

An analysis of business policy formulation designed to give the student practice, experience, and confidence in handling business situations, including those of a complex nature where basic policy decisions are necessary to assist in problem-solving. Typical business cases will be selected from the fields of finance and control, personnel, production, marketing, and general management for study and discussion. Determination of an acceptable course of action will be followed by the development of a proposed scheme of implementation.

90.441 *See* 90.341.

90.443 Management Accounting

The operational role of the accountant and his contribution, using accounting as a tool of management. Preparation and analysis of financial statements. Accounting systems and internal control. Introduction to cost accounting. Preparation and use of budgets. Capital budgeting.

90.446 *See* 90.346.

90.447 *See* 90.347.

90.450 *See* 90.350.

90.460 *See* 90.360.

90.461 *See* 90.361.

90.471 *See* 90.371.

90.472 *See* 90.372.

90.473 *See* 90.373.

90.474 Marketing Research

Principles and practices of marketing research, with emphasis on basic methods and techniques, sources and interpretation of data, and presentation of results.

90.491 Work Study

Detailed study of the processes of selection and critical examination of business, production, and design problems, introduction to work measurement techniques, effects of management controls on productivity, examination of labour's participation in improvement measures, and related labour-management relations.

90.496 Computer Systems

Methods used in the development of business data-processing systems—system specification; equipment appraisal, acquisition, and utilization; implementation and control. These techniques will be applied to the solution of advanced management problems.

BROADCAST COMMUNICATIONS

91.101, 91.201 Elementary Broadcast Technology

An introduction to the equipment used in radio and television broadcasting and to the techniques used in the various processes and procedures in the operation of broadcast stations. Starting with the organization of the industry and stations, the student continues with the study of microphones and turntables, control boards, tape recording, control-room accessories, music libraries, live studio pick-ups, remote broadcasting, and the procedures used in traffic systems and programme schedules. At the same time, students study the processes of picture transmission. Lighting and lighting equipment are studied, followed by picture and waveform monitors, applied optics, the vidicon and image orthicon cameras, film and slide projectors, video switcher and patch panels, video distribution, video tape recording, and test equipment. This course leads to actual radio and television production throughout the second year.

91.103, 91.203, 91.303, 91.403 Writing and Sales

Students require a knowledge of modern advertising methods as well as an understanding of the special techniques of writing for the broadcast media. Lectures and workshop sessions give the student a thorough indoctrination in advertising as used in today's marketing plans. Commercials are studied in all aspects, and the problems facing commercial writers in advertising agencies, stations, and retail organizations, as well as in the advertising departments of manufacturers, are compared, studied, and practised. Those with aptitude or talent for writing receive the groundwork for careers in this field.

91.109, 91.209 Introduction to News

The student in this course will be given his first look at the world of "electronic journalism." The course covers a history of news; newsroom organization and operations in radio and television; news writing and editing, news sources and coverage; production of news broadcasts and special-interest features. Introduction to News is preparatory to News in the second year, in which these fundamentals are expanded and students actually work in an operating newsroom within the technology. A good percentage of the time in Introduction to News will be spent in the study of current events to provide the necessary background for a qualified newsman.

91.110, 91.210 Broadcast Production

This first-year subject serves as an introduction and background study in several areas connected with radio and television broadcasting. A study is made of the legislation and regulations under which broadcasting in Canada is governed, in A.M., F.M., and TV. A first-term study is also made of the history of the development of broadcasting in this country, from the first steps, in radio, through to present-day radio and television broadcasting. The student is also introduced to the use of music in broadcasting, elementary work in the development of programming, and in the use of music as a production aid. The subject includes work in pronunciation and diction, the use of stress, phrasing and projection as applied to work in the industry. A large amount of laboratory time has been assigned to this subject in first and second terms, to lay the foundation for actual work in radio and television production in second year.

91.201 *See* 91.101.

91.203 *See* 91.103.

91.209 *See* 91.109.

91.210 *See* 91.110.

91.302, 91.402 Production—Radio

Students engage in practical work in radio production; the preparation and presentation of musical programmes, news broadcasts, remote broadcasts, and special-events coverage, in all phases of production from planning through to the finished product. The student gains practical experience in the use of all studio equipment, as well as remote pick-up equipment and portable recording facilities.

91.303 *See* 91.103.

91.305, 91.405 Contemporary History

The first half of this subject will survey quickly the late 19th century and early 20th century, with special emphasis on those events which provide a background to present world problems. The second half of this subject will survey the events of the past 40 years, with special emphasis on current world problems.

91.309, 91.409 News

News follows the first-year Introduction to News, in which fundamentals are expanded to give professional atmosphere to the training of neophyte "electronic journalists." The students will spend much time refining techniques and actually covering and editing the news. As in the first year, much time will be spent in studying current events as a background to the news as it is happening.

91.312, 91.412 Production—Television

Students engage in the actual production of television broadcasts, making use of full studio facilities in the production of television commercials, special-events coverage, the taking and editing of film material, and carrying out on-the-job training projects. The laboratories of the Broadcast Communications programme consist of a fully operative television station, equipped with all standard apparatus used in the industry, including a video tape recorder, full darkroom facilities, sound-on-film as well as silent motion-picture cameras, and three television cameras, including a colour camera chain, and colour monitors.

91.315, 91.415 Workshop—Television and Radio

Specialized equipment used in modern television and radio stations is studied in detail, and an advanced level of adjustment and maintenance skills is attained.

Emphasis is placed on the extensive use of sophisticated test equipment with an objective of students reaching a proficiency level such that full attention may be directed to the item being serviced and not on how to use the test equipment. In part of the laboratory time the technical students will combine forces with the production students, and full facilities will be used for programming on an accurately timed and realistic basis.

91.402 *See* 91.302.

91.403 *See* 91.303.

91.404 *See* 91.204.

91.405 *See* 91.305.

91.409 *See* 91.309.

91.412 *See* 91.312.

91.414 Radio and Television Transmission

This course follows 43.324, Radio Circuits, and takes the student into the theory and practice of the adjustment and maintenance of A.M., F.M., and

TV. transmitters. The student is taught the use of both simple and sophisticated equipment used in the testing of all aspects of transmitter operation. He will become familiar with the use of such instruments as the oscilloscope, distortion meter, sideband analyser, video test signal generator, carrier frequency monitor, and other equipment as applied to radio and television transmission.

91.415 *See* 91.315.

HOTEL, MOTEL AND RESTAURANT MANAGEMENT

92.101 Front Office Management

Front office organization and psychology. Materials, equipment, and supplies used. Rooms salesmanship. Reservations, registrations, and front office "accounting" for various-size hotels. Handling of cash and credit transactions. The night hand-transcript, and the processing of accounts and the night audit on billing-audit equipment. Telephone switchboard.

92.102, 92.202 Food and Beverages

Organization, positions, and duties of catering department staff. Sources, selection, and basic preparations of food; culinary terms, the types, uses, and maintenance of kitchen equipment. Food and beverage purchase and storage. Service of food and beverages in dining-rooms, coffee-shops, banquet-rooms, lounges. Grading and specifications. Wines and their origins. Laboratory hours will be devoted to demonstrations, observations, and practical work in the cafeteria kitchen and dining-room.

92.202 *See* 92.102.

92.203 Bar Management and Housekeeping

Housekeeping organization and duties. Control forms used. Supplies and equipment used. Specifications for purchasing equipment and linen. Laundry operations. Beer-parlour organization and control. Cocktail-lounge organization, glassware, types of beverages, dispensing devices, and control systems.

92.211 English—Speech

Speech construction; types of speeches; speaking before groups; introducing and thanking speakers, chairing meetings, and interviewing. Practice in preparation and delivery of talks to groups.

92.302, 92.402 Food and Beverages

Management of food and beverage departments—advanced food preparation; food costing; menu planning; special-function catering; convenience and frozen-food processing; purchasing and specifications of equipment; organization and planning, including financial and personnel policies; science of food and nutrition; organization of stewarding department; purchase, storage, and control of china, glass, silver, linen, food, and beverages.

92.312, 92.412 Engineering and Maintenance

Heating, elevators, fire-fighting equipment, hydraulics, refrigeration and air conditioning, electrical equipment, swimming pools.

92.313, 92.413 Hotel and Restaurant Accounting

Internal control of rooms, food and beverage departments. Payroll (labour costing) control. Food and beverage purchase, storage, and issuing controls. Interpretation of financial statements and comparison and analysis of statistical information. Credit cards, leases, franchises, and financing. Insurance and taxation. Uses of data-processing equipment in hotels. Hotel and motel evaluations.

92.314, 92.414 Planning and Design

Fundamental introduction to blueprint reading. Principles of design for hotels and restaurants. Departmental layouts, floor plans, and traffic flows. Selection of equipment and furnishings. Principles of decoration and colour theory. Lighting. Sources, specifications, and qualities of furnishings, materials, and fabrics.

92.315, 92.415 Advertising and Promotion

Advertising media available—newspapers, trade publications, direct mail, radio and television, internal advertising, etc. Advertising agencies. Public relations versus advertising — media and contracts. Sales promotion and sales departments.

92.316, 92.416 Human Relations

Selection and training of staff—applications, interviews, tests, objectives, methods of training. Job analysis, job descriptions. Thought and leadership. Co-ordination of hotel or restaurant activities with the community. Co-operation with convention bureaux, travel agents, and tourist groups. Labour relations from management and union viewpoints.

92.402 *See* 92.302.

92.412 *See* 92.312.

92.413 *See* 92.313.

92.414 *See* 92.314.

92.415 *See* 92.315.

92.416 *See* 92.316.

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